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Feedlot Diseases and Their Control

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Introduction

Cattle in feedlots face disease challenges similar to other classes of livestock and production settings. The prevalence of disease in feedlots is influenced by many factors, including immune status, level of stress, pathogen load, environment, nutritional background, and feeding management, as well as the level of execution of animal husbandry practices. Cattle in feedlots are primarily susceptible to infections and metabolic diseases, and are less threatened by neoplasia and poisoning due to their age and controlled environment, respectively.

The constant movement of cattle into and out of feedlots makes control of infectious diseases challenging, due to constant exposure to pathogens and the stress of commingling. In addition, cattle arrive in feedlots with a wide variation in their background; some have been managed so that they can withstand the rigors of adjustment to feedlot life, while others are very susceptible to most any disease exposure.

The challenge for feedlot managers, caretakers, and veterinarians is to develop an overall management program, including animal health, nutrition, and environment, that reduces stress and at the same time optimizes resistance to disease. The purpose of this paper is to highlight the more important disease problems in feedlot cattle and to briefly discuss their control.

Bovine Respiratory Disease

Most feedlot-associated deaths result from bovine respiratory disease (BRD), including bronchopneumonia and fibrinous bronchopneumonia, commonly referred to as “shipping fever”. At necropsy, varying degrees of lung consolidation, necrosis, abscess formation, fibrin deposition, and pleural effusion are found. Common bacterial causes are *Mannheimia haemolytica*, *Pasteurella multocida*, and *Haemophilus somnus*; *Arcanobacterium pyogenes* and *Mycoplasma* species are frequently cultured from chronic cases. Various viruses, especially IBRV, BVDV, BRSV, and PI₃, often play a significant role in BRD outbreaks.^{7, 14}

Control of respiratory tract disorders in feedlot cattle is of paramount importance since they are the most common cause of death and account for 57.1% of total deaths⁵. Averaged over time, deaths attributed to respiratory tract, digestive tract, and other disorders accounted for 7.2, 2.9, and 2.5 animals/1000 cattle entering the feedyard.⁵ The cost of BRD has been reviewed.⁹

At the forefront of respiratory disease control is the preventive medicine program, conducted mostly at arrival processing. Incoming cattle are routinely vaccinated against respiratory diseases, treated for internal and external parasites, administered a growth-promoting implant, and identified with an ear tag. Cattle deemed to be at high risk of developing BRD are routinely administered metaphylactic antibiotics. In general, treating high-risk cattle at processing with metaphylactic tilmicosin reduces BRD morbidity and mortality by about 50%, and improves daily gain by approximately 10%. The practice of metaphylaxis has been reviewed by others.^{4, 15}

Cattle in feedlots are checked daily for health problems or injury, primarily by people on horseback known as pen riders. Pen riders are often responsible for checking 5,000 to 10,000 cattle each day, as well as shipping and receiving cattle. Pen riding intensity is a primary focus of the feedyard consulting veterinarian, as this activity is the first line of defense to minimize losses due to BRD. Pen riders must be properly trained and motivated, and must understand cattle handling and behavior.

Cattle removed from the home pen (pulled) as sick are moved to a hospital facility where they are examined in a cursory manner (weighed, rectal temperature, quick visual evaluation), and treated as prescribed by the consulting veterinarian. Antibiotics are the primary tool to treat BRD, and the choice is based on a combination of: 1) clinical response data from treatment records analysis; 2) field trial outcomes; 3) culture and sensitivity (MIC) results; and 4) necropsy findings.¹⁰ Very little support for adjunct therapy is found in the literature.¹ In-house studies conducted in our practice showed that vitamin C use, in combination with an antibiotic, had a sparing effect on the mortality rate of treated calves. The reported case fatality rate for calves treated for BRD ranges from 1.4 to nearly 15%^{2, 11}; in our practice we target a CFR of 5-10%, which is very achievable.

An aggressive hospital management program, emphasizing proper stocking density, pen maintenance, and a re-evaluation/re-treatment program with high, established standards, is necessary to achieve goals established for the animal health program. Continued emphasis on diagnostics, especially the necropsy examination of all fatal cases, is necessary to ensure proper and accurate management of the sick cattle. Frequent records analysis helps establish trends, identify new problems, and document progress.

Hemophilosis

Haemophilus somnus infection, or hemophilosis, is more of a problem in Canadian feedlots than in the US. This condition has been well described by Guichon et al³.

Haemophilus somnus infection can be a part of the BRD complex, but has systemic manifestations as well. This includes myocarditis (necrosis and/or abscesses), pericarditis, pleuritis, polyarthritis, and TME. Typically, calves with hemophilosis become ill and die later in the feeding period than calves with fatal fibrinous pneumonia.

Treatment of hemophilosis is often unrewarding as it is difficult to distinguish clinically from BRD, and often calves are found dead or moribund. Control programs have been less than

satisfactory. Vaccination is recommended, but the effectiveness of vaccine programs is often disappointing. The use of feed-grade antimicrobials have been shown to be beneficial (Guichon PT, personal communication).

Acute Interstitial Pneumonia

Acute interstitial pneumonia (AIP) of feedlot cattle has been recently reviewed.¹³ AIP is most common in feedlot cattle with more than 45 days on feed. Onset is acute, and signs include open-mouth breathing, extended head and neck, expiratory push, and frequently an elevated respiration rate. Cattle are generally in good to excellent body condition.

Woolums¹³ reported that bacterial pathogens are found in the lungs of some cattle with AIP, but not in others. Heifers are at much greater risk of developing AIP than steers, but the exact reason has not yet been described. Specific feedstuffs, particularly those that produce 3-MI or 3-MEIN metabolites, seem to be associated with the prevalence of AIP. Treatment attempts have been very unrewarding; survival rate is low. Control/treatment through the use of vitamin E and/or aspirin has been studied⁶, however at this time the overall utility of these interventions is not well defined.

Digestive Disorders

Digestive disorders, manifested primarily as rumen tympany or bloat, are the second leading cause of death in feedlots. Discussion of this topic will be limited, as most feedlots employ a consulting nutritionist to advise them on feeding management. It is important to note, however, that feeding of ionophores is a very useful tool to reduce the incidence of digestive disorders. Feed-grade tylosin is effective for reducing liver abscesses.

Buller Syndrome

“Buller” is the term used to describe a feedlot steer repeatedly mounted by its pen mates. Buller steers are frequently injured by this activity, sometimes fatally.

The primary management practice to address this vice is for pen riders to promptly remove the buller steer (victim) from the pen and pen it with other buller steers in what is termed a “buller pen”. Some feedyards have successfully re-introduced bullers into their home pen at re-implant time, with reported success rates of about 75%. Other feedyards choose to leave bullers in the buller pen until market time.

Coccidiosis

Coccidiosis is not diagnosed as frequently as it was prior to the approval and use of monensin. The ionophores, decoquinate and amprolium are effective coccidiostats and are successfully used to control this disease. Ionophore usage predominates in feedyards, primarily because limiting the number of feed additives used makes feed manufacturing and management easier than when multiple products are in inventory.

Pregnancy Management

Pregnant heifers are a liability in the feedyard. Current management practices include: 1) pregnancy checking cattle at the point of origin and withholding them from shipment; 2)

pregnancy checking heifers at the feedyard and aborting those that are pregnant; or 3) doing nothing to address the problem.

Research has shown that pregnancy checking and aborting those pregnant is preferable to doing nothing at all. It is less stressful for the heifer to expel an immature versus a full-term fetus, which favorably addresses production, economic, and welfare issues.

Heifers pregnant 4 months or less are administered prostaglandins, while those over 4 months pregnant are administered a combination of prostaglandins and dexamethasone. It is important to delay abortion of heifers at risk of BRD until the threat of BRD is minimal, generally 3 weeks following feedlot entry.

Miscellaneous Diseases

Several other diseases affect feedlot cattle, but a more detailed discussion is beyond the scope of this paper. For example, foot rot, diphtheria, "honker syndrome", prolapses, injuries, etc., are frequently seen, but the incidence is generally very low.

Abstract

Les bovins en parc d'engraissement sont soumis aux mêmes pressions face aux maladies que les autres types de production bovine. Les facteurs impliqués dans le développement des maladies sont nombreux. Le défi des producteurs et des vétérinaires est d'élaborer un programme complet afin d'améliorer la résistance aux maladie. Nous aborderons les principaux problèmes de santé dans les parcs d'engraissement et leur contrôle.

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