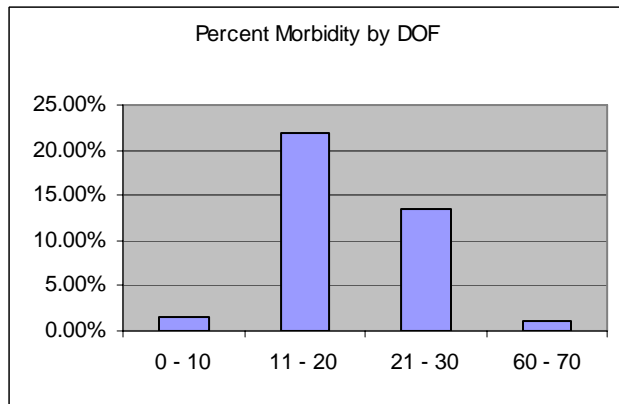


BRD, BACKGROUNDING, VACCINATIONS



Increasing numbers of cattle are these days finished in a lot-feeding environment, and so understanding the risks associated with a change to an intensive feedlot environment can help us to mitigate against associated losses from illness (morbidity) or deaths (mortality). I mentioned my BRD Study Award trip in the winter newsletter but in this issue I would like to cover some of the health issues in more detail. The veterinary consultancy practice I spent time with managed the health and logistics of a million cattle annually and conducted numerous research trials. In the process all mortalities were thoroughly examined by the vets and the findings categorised into a primary cause of death and any secondary illnesses also recorded into their database. As all the carcasses were “freshly dead” the prospect of a good diagnosis on gross findings alone was high. The principal categories were BRD, Histophilus, Metabolic, Arthritis and Miscellaneous. BRD or Bovine Respiratory Disease is easily the largest group for both mortalities and morbidity, and this is also true for Australian Feedlots, albeit at a lesser level. BRD is a complex interaction of causal agents, viruses and bacteria, and stresses sufficient to compromise the immune system. These include transport, co-mingling/crowding/competition/injury, heat/cold/wind/wet, handling and husbandry procedures (dehorning, castration/spaying etc), feed and water changes. Stock entering a feedlot experience some or all of these stresses and consequently may succumb to the many willing bacteria and viruses ready to invade. Most illnesses will occur during the first 30 days on feed as shown graphically above. So it stands to reason that anything we can do to mitigate these impacts will improve profitability. These include management options and vaccines. A number of research trials have shown clear health and growth benefits of yard weaning as illustrated by the following graphs.

Reducing the amount of **stress from transport and handling** prior to feedlot entry as shown by the following table also has a significant effect on morbidity.

Effect of cattle origin on Feedlot Morbidity	
Origin	Pull Percent
Saleyard Auction	20 – 25%
Private– direct consign	13 – 16%
Custom Fed	6 – 10%

In recent years there has been a trend to **backgrounding** stock to further reduce losses from illness in the feedlot. Many animals carry potential pathogens within their bodies but have been exposed to them for some time and have good immunity, but when mixed with new stock from another property may exchange pathogens to which they have little or no immunity. If this initial co-mingling occurs in a very stressful environment such as induction to a feedlot, then diseases can result. True backgrounding is the gathering together of groups of cattle in sizes to fill a feedlot pen of 200 – 250 head, and running them on pasture for a period of at least 40 days to ensure

good socialisation and immune stabilisation in a less stressful environment. The backgrounding period is also used to deliberately immunise the cattle against specific pathogens with vaccines, and to rid stock of any parasite load.

By manipulating the nutrition during this period it is also possible to influence the finished carcass attributes. Beef CRC trials show that a lower growth rate (0.6kg/d) during backgrounding will enhance feedlot ADG (average daily gain) and FCR (feed conversion ratio) but reduce marbling, whereas a higher plane of nutrition (>0.7kg/d) can enhance marbling at the expense of ADG and FCR. This knowledge can be important if supplying the high yield/lower fat domestic market or the high marble driven Japanese B3 market.

In North America there are numerous vaccine choices for BRD including 160 registered vaccines for Pestivirus alone! In Australia there are 3 vaccines for BRD, **RhinogardÆ**, **Bovilis MHÆ** and **PestigardÆ**. These vaccines respectively protect against **Infectious Bovine Rhinotracheitis (IBR)**, **Mannheimia haemolytica**, and **Pestivirus**, which is now often called **BVDV**. IBR is a nasty acute viral disease, which is seldom seen outside of feedlots in Australia. RhinogardÆ is a live vaccine delivered as a single dose into the nasal passage of the animal, conferring rapid immunity and so of no particular advantage prior to feedlot entry. Conversely there is now considerable research to support the use of Bovilis MHÆ to protect against Mannheimia haemolytica prior to feedlot entry. One study showed a 50% reduction in morbidity, and of the sick animals all survived compared with only 37% of the unvaccinated group. Another study revealed 8% improvement in ADG and even more benefit to FCR. Mannheimia haemolytica is the single most destructive bacteria involved in BRD in Australia, possessing a unique ability to not only invade lung tissue but to release a potent leukotoxin which further destroys the animals immune white cells or leukocytes. The resultant fibrinous pneumonia is difficult and expensive to treat with antibiotics and frequently fatal. Developed in Australia by CRC, CSIRO and manufactured by Intervet, this vaccine is administered twice at 3-4 week intervals, and so a first injection should be given at least 21 days prior to feedlot entry to allow sufficient time to confer some protection, with the booster shot at feedlot induction. The vaccine is only available from vets, comes in 100ml (50 doses) and 250ml (125 doses) packs, costing \$2.80/dose.

BVDV has attracted an enormous amount of interest around the world in recent years, as more information becomes known about how this interesting virus manifests in herds. BVDV is often referred to as the “cow aids” as it also has the ability to suppress the immune system. Of the herds sampled in our district all appear to have seroconversion i.e. have been in contact with the virus. We now know that almost all transmission occurs from contact with a **persistently infected (PI)** animal, so it follows that most herds have one or more PI animals. PI's occur after becoming infected as a foetus, and rather than dying and being aborted, they somehow survive and shed massive amounts of virus from all secretions infecting other animals. Essentially they are infected in early pregnancy before they develop an immune system and so consider the virus particles to be part of its own being. PI's invariably die prematurely from any number of secondary infections but earlier this year I diagnosed my first PI case among a draft of bulls being prepared for sale. Failure to detect this bull would have ensured losses for the purchaser. PI's spreading vast amounts of virus infecting others around them cause transient or acute infections which may go unnoticed, but may also cause a dip in immune status, and if linked to other stresses such as an early feedlot environment, may lead to a variety of diseases. Hence, the role of BVDV in BRD can be a direct pathogen or an indirect immune depressant. Foetuses infected later in pregnancy may abort or be born weak or suffer birth defects not unlike Akabane calves. Until recently our main strategy for BVDV was to try to identify the PI's and use them to “auto-vaccinate” the remaining herd prior to pregnancy eg running with pre-joined maiden heifers. Unfortunately, identifying the PI's is neither easy nor cheap, and given that they die prematurely the cycle of herd exposure and naivety rebounds between generations.

So the dilemma for producers with endemic exposure to this virus is whether to bother to tackle the ongoing losses or not. In recent years CSL animal division (now owned by Pfizer), in combination with Beef CRC has released Australia's only BVDV vaccine known as **PestigardÆ**. In August 2006, the BVDV technical advisory group released new “Guidelines for the investigation and control of BVDV” which, when combined with the vaccine and new more economic diagnostic tests now available, provides a more effective and systematic approach to control or eradication of this virus.

With the uncertainty of season, some producers are considering an early weaning strategy. This can be a good way of preserving cow body condition (and thus next year's fertility), and reduce overall feed demand. Another strategy is to scan preg test maidens (detected down to 30 days) and even the cow mobs to detect and cull non-pregnant animals earlier. For cows this may mean an early wean for their calves.

It seems much too soon to endure another full-on drought, but I guess climate is measured more in eons than years. On behalf of the vet team, thankyou for your support in 2006, and we hope you can all enjoy the festive season in gumboots and a drizabone!
Happy Christmas and Best Wishes for 2007.