

CRC Health & Welfare Program

Key messages and industry implications

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- Stress is a defence reaction resulting in decreased growth and impaired immunity. Stressed animals are more susceptible to disease.
- Stress reactions divert nutrients away from growth to defence of the body.
- During the early phases of stress response, immunity against disease is decreased; this leads to an increased risk of infections such as respiratory disease.
- The ability of an animal to cope declines as stressors increase, ie avoid exposing cattle to multiple stressors at one time.
- 80% of illnesses which occur in the feedlot happen in the first 30-40 days on feed.
- There has been an improvement in combating respiratory disease through better management techniques such as yard weaning and backgrounding.
- Adaptability of cattle to new environments (eg the feedlot) can be improved by both genetic selection and husbandry practices.
- Immune competence is important. One experiment examining yard weaning showed that the effect of vaccination and yard weaning on weight gain was 1.53kg/day vs. 1.28kg/day for the paddock weaned, unvaccinated group.
- Health and growth rate in the feedlot is improved by yard weaning. There are also fewer animals getting sick, therefore treatment costs in the feedlot decrease.
- The financial benefit of yard weaning is estimated to be \$33/head during the feedlot finishing phase.
- There are multiple infections of viruses and bacteria that spread amongst animals in the feedlot.
 - **Viruses** include
 1. *Infectious Bovine Rhinotracheitis virus (IBR)*
 2. Parainfluenza 3 virus (PI13)
 3. *Bovine Respiratory Syncytial Virus (BRSV)*
 4. *Bovine Viral Diarrhoea Virus - Pestivirus (BVDV)*
 - **Bacteria** include:
 1. *Mannheimia haemolytica*
 2. *Pasteurella multocida*
 3. *Actinomyces pyogenes*
 4. *Salmonella spp.*
 5. *Haemophilus somnus*
 6. *Fusobacterium necrophorum*
 - *Mannheimia haemolytica* was found to be the most common bacterial respiratory infection.
 - The most simple and effective procedure for reducing sickness in feedlots is to combine yard weaning and pre-feedlot vaccination (1-2 months prior to feedlot entry) for Bovine respiratory disease which accounts for a large % of sick animals in a feedlot environment.
 - IBR intranasal vaccine has been developed (Rhinogard), to be administered as part of feedlot induction.
 - *M.haemolytica* vaccine has been developed, soon to be commercialised.
 - Pestivirus (Bovine Viral Diarrhoea) is a viral cause of BRD.
 - Pestivirus is also a big immunosuppressive. The high exposure rate of Pestivirus at feedlot entry and the rapid exposure which occurs in the first few weeks means that effective use of this vaccine must occur on the property of origin or during the backgrounding phase. Pestivirus vaccine has been commercially released by CSL.
- Associations between yard weaning, temperament and feedlot performance indicated that nervous cattle with faster flight times have higher levels of the stress hormone cortisol in their blood, poorer growth and more health problems than quiet cattle with slower flight times.
- Mixing unfamiliar steers of similar weight in similar group sizes during the last week of feedlot finishing can lead to tougher meat.

Current Research - Results to follow

- The behavioural responses associated with flight time in cattle (neurophysiologic basis - physiology that deals with the functions of the nervous system.)
- Better predictors of stress sensitivity of cattle.
- Associations between stress responsiveness and growth rate.
- Effect of lairage duration on meat quality.
- Interactions between temperament, handling practices and performance in *Bos Indicus* cross cattle.
- Biochemical basis of the affect of acute pre-slaughter stress on meat quality.