Agnote

788

No. J75

October 2000

Agdex No: 420/77

ISSN No: 0157-8243

Heat Stress in Cattle

J. Coventry and A.J. Phillips, Animal Production, Alice Springs

This Agnote provides information on how to reduce the risk of heat stress in cattle.

OVERVIEW

Heat stress is an important animal welfare issue for the cattle industry in northern Australia. Serious heat stress incidents associated with live cattle exports attracted community concern in the mid-1990s.

These incidents highlighted the need for risk management when handling and transporting cattle in hot and humid conditions.

The risk factors for cattle heat stress involve all aspects of cattle type, facilities, mustering, handling, treatment and trucking. These risk factors can be minimised or eliminated by cattle producers, agents, transporters and exporters, through planning and shared responsibility.

WHAT IS HEAT STRESS?

Heat stress occurs when an animal has excess body heat that it cannot lose.

Heat stressed cattle will:

- eat and ruminate less;
- seek shade or if there is no shade, align themselves with the sun;
- breathe with their mouths open, pant, salivate and splash water if it is available;
- become unresponsive, lie down and start to die when their body temperature reaches 41.5^{o}C.

HOW TO REDUCE THE RISK OF HEAT STRESS

To reduce the risk of heat stress, consider cattle selection, facilities and management.

The risk is reduced in:

- cattle that produce minimal excess body heat;
- cattle with the ability to lose excess body heat;
- conditions that reduce heat build-up in cattle.

MINIMISE EXCESS HEAT PRODUCTION

Quiet tempered cattle are less likely to become excited ('stirred up') and less likely to overheat. Quiet temperament comes with selecting quiet breeding stock, education and quiet handling.

Steady mustering and quiet handling reduces the chance of cattle becoming 'stirred up' and overheated.

Efficient facilities promote the smooth flow of stock during handling and reduce the chance of cattle becoming 'stirred up'.

LOSE EXCESS HEAT

Adapted cattle have genetically determined physical features to better suit an adverse environment. For example, tropically adapted cattle have shorter coats, longer dewlaps and more sweat glands to help lose body heat.

Acclimatised cattle have seasonal adaptation to better suit an adverse environment. For example, cattle with a hairy winter coat will lose this before summer.

Lean body condition increases the ability to lose heat. 'Fat' cattle have a greater risk of heat stress because excess body fat acts as insulation and slows body heat loss.

Rest gives cattle an opportunity to settle down, decrease production of body heat and increase heat loss. Rest can be especially important after helicopter mustering.

REDUCE HEAT BUILD-UP

Shaded yards protect cattle from the heat of the sun. This is particularly important for British and European types of cattle. The shade must not interfere with the air flow through the yards.

Cool fresh water helps cattle lose heat through evaporative cooling. Buried water pipes and shaded troughs ensure delivery of cool water to cattle.

Sprinklers help cattle to lose excess body heat via evaporative cooling if humidity is below 50%.

Room in yards and pens allows cattle to spread out. This maximises air flow and heat loss.

Handle during cool hours to reduce body heat build-up.

Travel during cool hours and after dark to reduce body heat build-up.

Prevent overloading on trucks to optimise air flow and heat loss.

Shaded lower truck decks can provide protection for more heat susceptible cattle.

Electrolytes may be provided to cattle to help replace body salts and fluids lost during mustering and transport.

Give extra consideration to cattle recently vaccinated for tick fever. These animals can develop a reaction after vaccination as a normal part of developing immunity. If practical, consider vaccination well before transport, to allow recovery from any post-vaccination reaction.

Cattle may develop a reaction:

- Day 8 to 20 after monovalent tick fever vaccination;
- Day 5 to 20 after bivalent tick fever vaccination;
- Day 5 to 60 after trivalent tick fever vaccination.

Give extra consideration to cattle travelling into hotter and more humid conditions. For example, transporting of cattle from cool, dry areas to hot, humid areas markedly increases the risk of heat stress. When transporting cattle from Central Australia to the Top End during September and October, cattle are likely to be travelling into higher humidity *and* higher temperatures (see Figure 1). Data from the USA shows that with the typical daily temperatures of Darwin in the 'Wet', the risk of heat stress soars when humidity exceeds 45%.

Figure 1. HEAT STRESS RISK PERIODS

FOR CENTRALIAN CATTLE TRUCKED TO THE TOP END

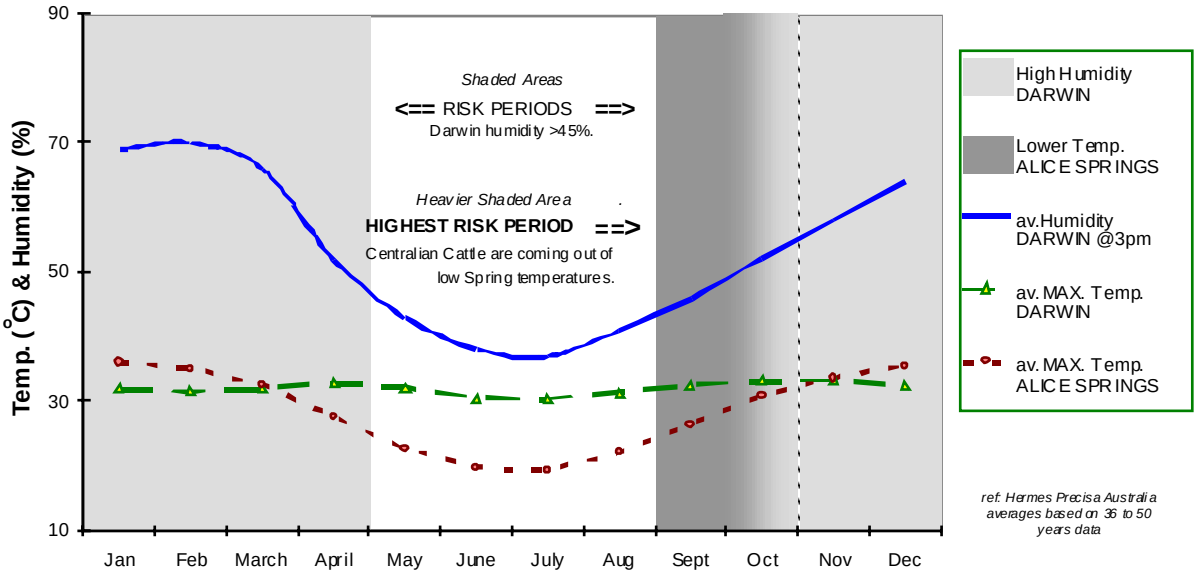

Figure 1 is based on 50 years of Darwin and Alice Springs climatic data. It models the period of high risk for cattle heat stress in the Top End, plus an additional period of heat stress risk if cattle travel out of cool, dry Central Australian conditions into hot, humid Top End conditions.

Please visit us on our website at www.primaryindustry.nt.gov.au

Published: Friday 27 October 2000.