

Hot weather and welfare of dairy cows

Jim Webster & Karin Schütz, AgResearch, Ruakura

1. Background

- Management of heat is an important issue for dairy farmers, impacting welfare and production
- Cow responses to heat can occur at a temperature – humidity index of 68 (21°C and 75%)
- The behavioural, physiological and cognitive responses of cows to heat are all considered in an animal welfare framework of 3 main domains/orientations
 - Natural behaviour: Shade seeking, water seeking, standing, grazing pattern
 - Physiology: Body temperature, production (THI >68), fertility, eating, panting/drooling, sweating
 - Cognitive: Reduced comfort, aggression, frustration
- Close relationship between welfare domains
- Three domains are a convenient and simple way to think about achieving good welfare

2. Management strategies

- Shade:
 - Access to shade increased production by 0.5L/cow/day
 - Shade is highly valued by cows, use and value increases as it gets hotter
 - Shade protects cows from solar radiation, body temperature is lowered
 - Cows prefer shade that blocks more solar radiation (>50%)
 - Cows prefer shade to sprinklers (NZ)
 - Shade area important for all cows to use and improve cooling (3-4m²/cow). At 2m²/cow there were increased aggressions and panting - indicating less cooling effect
- Sprinklers:
 - Timing may be restricted to milking
 - Improved lowering body temperature than shade; shade improves effect of sprinklers
 - Can lower body temperature for four hours
 - Degree of cooling variable and can be difficult to manage
 - Reduce insect annoyance
 - NZ cows may find sprinklers aversive

3. Variable Risks and Monitoring

- Risk factors mean that heat susceptibility can vary:
 - Temperatures above 21°C - High humidity above 75% (combination important)
 - Higher night time temperatures
 - Production, Breed, Age, Coat colour, Endophyte
- An on-line heat stress indicator tool has been developed that uses climate data from NIWA. It is currently being tested by some farmers and consulting officers to ensure that it is useful, a review of this testing will held in 4-6 weeks time
- Monitor behavioral signs of heat (e.g. shading, crowding water trough etc) and physiology (e.g. panting)