

Tackle heat stress and keep the weight off cows' feet

# Keep 'em cool

Hoof health can suffer if your cows are hot and bothered. We spoke to two leading cattle vets to find out why and what producers can do to help reduce cow-house humidity, maintain good locomotion scores and keep lameness in check.

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**H**eat stress is something that can blight dairy herds all year round – not just in the summer months. Temperatures certainly soared in summer 2014 and housed and grazed cows alike felt the impact of that. And many are still suffering – as a result of those temperatures or on-going humidity issues at winter housing.

As well as the classic signs of heat stress, including panting and ‘loitering’ cows, showing signs of reduced dry matter intakes and milk yields and sub-optimal fertility, vet Debby Brown, from Lancaster-based Advanced Nutrition, says that she also saw a reduction in mobility. “I saw one producer who had an increase in lameness and abscesses approximately six weeks after the hot weather started. And this year I visited far too many units where the cows were stood at the ends of cubicle sheds trying to get fresh air or were stood around water troughs instead of eating or lying down. This extra pressure on their feet had a significant effect on their hoof health.

“Even well into the autumn I was seeing the ‘after effects’ of summer heat stress. Locomotion scores had taken a dive because hot cows spend less time lying down. It’s easier for them to dissipate heat if they’re standing.

### **Bruised soles**

“Not only does all this standing around reduce the amount of time they spend ruminating and result in the obvious drop in dry matter intakes, milk yield and productivity, but it also increases the pressure on their feet and often results in bruised soles. This is particularly severe in housed cows as they’re standing on concrete,” she explains.

The optimal lying time for cows is around 12 hours a day. If this starts to fall, be it because cubicles are poorly designed and uncomfortable or because cows are too hot to lie down, their standing time increases, and so does the risk of hoof health problems.

“Typically, heat stress results in bruising, but if it’s not addressed then this bruising can develop into a sole ulcer. If there’s an underlying problem then heat stress will make it worse. But, in general, in heat stressed herds I tend to see locomotion scores move from zeros and ones and up to twos and threes. Basically I’ll see a slight increase in non-sound cows, but it’s important to remember that if a cow can’t move freely and comfortably then that will also impact on her dry matter

intake, milk yield and fertility,” says Mrs Brown.

The thermo neutral zone for a cow is between 4°C and 21°C, according to Sara Pederson, a vet specialising in hoof care and cattle mobility. “Heat stress is the result of a combination of temperature and humidity – the temperature humidity index. Historically we have considered cows to be under stress when THI reaches 72, however, recently this has been lowered to 68 – this is way before a human would start to feel uncomfortable,” she says.

“It’s also vital to observe the cows. Cows are not good at sweating so their main cooling mechanism is panting.”

### **‘Invisible’ consequence**

Cows associate darkness with coolness, so they will also bunch up on the shade if they are hot, according to Miss Pederson. “Lameness is an ‘invisible’ consequence of heat stress with a consistent increase in lameness typically seen between eight and 10 weeks after the initial period of heat stress due to an increase in sole haemorrhage and ulcers. Standing also reduces the amount of blood circulating through the foot and therefore delays the healing of lesions. An increase in sole fractures is also common – these are lesions in the heel region of the medial claw on hind feet.”

When heat stressed, a cow’s temperature will increase by 0.5°C per minute when she is lying down. At a critical point (38.8°C body temperature) she will have to stand in order to be able to ‘thermal’ pant and reduce her body temperature.

A cow’s temperature decreases by 0.26°C per minute when she is standing – that’s half the rate that she heats up at when lying down. She will lie down again when her temperature cools to 37.7°C

As core body temperature increases, lying time bouts decrease. The overall effect is that cows lie down for shorter periods of time during periods of heat stress as they have to keep standing up in order to cool down.

“Key to preventing lameness caused by heat stress is to enhance cooling when the cow is standing and to minimise accumulation of heat when she is lying down,” says Miss Pederson, adding that the collecting yard is the critical point to help alleviate heat stress.

“In many situations heat stress is exacerbated in the collecting yard due to cows being bunched up too tightly or poor use of fans that simply re-circulate hot humid air. As a result cows actually



*Sole fracture: an increase in cases could be the result of heat stress*

accumulate rather than dissipate heat.” She says that fans that move warm air at higher speeds do not aid cooling as the cow does not sweat. “There’s no cooling effect just from air movement. They create velocity but not ventilation.

“To alleviate heat stress we have three options: cool the cow, cool the air around the cow or a combination of both.”

### **Supplementary ventilation**

If producers want to cool the air then they need to add fine drops of water, or mist, to it. And if they want to cool the cow then they need larger water droplets to soak her.

“Wetting skin alone is insufficient to cool cow – you also need ventilation to evaporate water. So a combination of soaking and ventilation is the most effective.

“And naturally ventilated sheds fail to do a consistent job on still days and therefore supplementary ventilation is required,” Miss Pederson adds.

Mrs Brown agrees: “Even though the summer is now a distance memory, I’m still seeing herds with a heat-stress legacy, in the form of lameness. And other herds are still suffering from heat stress at housing. It’s vital to cool the cows in order to maintain lying times and take the weight off their feet. Without rest, the bruising won’t go down and it can progress into more severe hoof health issues if it’s just ignored.” |