DAIRY HERD HEALTH & PRODUCTIVITY SERVICE

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Heat stress in dairy cows

Regardless of the potential causes, there is no doubt that temperatures have been steadily rising, and this can have a range of effects in agriculture. One of these is **heat stress**, where cattle are unable to regulate their body temperature effectively. Traditionally heat stress has been considered to be a problem for cattle in the tropics and America, but there is increasing evidence that it is a problem for UK dairy cows.

Heat stress can result in a number of harmful effects in dairy cattle. Reductions in Dry Matter intake and milk production associated with heat stress have been well documented, with increased risks for diseases such as displaced abomasum, lameness and mastitis. Recent research has shown that heat stress in pregnant cows can result in lower calf birthweights, reduced colostrum production, heifer calf udder development and even potentially lactation performance, suggesting that it may have long-term harmful effects on the next generation.

It is important to recognize that heat stress is a combination of both environmental temperature and relative humidity (RH), and this is taken into account in the Temperature Humidity Index (THI), illustrated in the table below. In environments with high humidity (often encountered in housed cows), heat stress may occur in temperatures from 22˚C – often encountered under UK conditions! Indeed recent work has shown THI over the critical 72 threshold are common on UK dairy farms.

THI	
Light	(68-71)
Moderate	(72-79
Severe	(80-89)
Very severe	(>90)
Deadly	(>100)

Humidity (%) / Temperature (C)

	20	30	40	50	60	70	80	90	100
22	66	66	67	68	69	69	70	71	72
24	68	69	70	70	71	72	73	74	75
26	70	71	72	73	74	75	77	78	79
28	72	73	74	76	77	78	80	81	82
30	74	75	77	78	80	81	83	84	86
32	76	77	79	81	83	84	86	88	90
34	78	80	82	84	85	87	89	91	93
36	80	82	84	86	88	90	93	95	97
38	82	84	86	89	91	93	96	98	100
40	84	86	89	91	94	96	99	101	104

Temperature Humidity Index (THI) for cattle. Taken from www.nuscience.eu

How can you recognise that heat stress may be affecting your cows?

- Reduced feed intakes and milk production.
- Cows will appear to pant, with increased water consumption (crowding around water troughs for example).
- Cows will stand for prolonged periods
- Cows at grass will seek shade, often gathering under trees or other available shelter.
- Dataloggers are relatively cheap, and will monitor both temperature and RH on a regular basis with alarm systems, giving quick alerts.
- In the future, animal-based sensors may be able to monitor cow physiology and behaviours to pick up heat stress responses in cows quickly.

What can you do about heat stress?

- Nutrition. Due to the reductions in feed intakes, it is usually recommended to increase levels of concentrate feeding to maintain nutrient intakes. However, it is important that this does not result in rumen acidosis, and so needs to be done in conjunction with your feed advisor. Feeding cows in the evening may also help to maintain Dry Matter intakes.
- Water. Provide plenty of clean water at multiple sites throughout the shed and fields.
- Ventilation. Assess the airflow within the building and collecting yard to ensure that airflow is not impeded. Improving side inlet and ridge outlet ventilation can make significant differences, utilising natural ventilation.
- Cooling. Water sprays and misters are often used overseas, but must be combined with mechanical ventilation fans to improve evaporative heat loss. This can be particularly effective in collecting yards.
- Shade. In cows at pasture during high temperatures, trees and hedges can provide shade for cows, but require a long-term plan.

The changing climate can have potentially harmful effects on cows, both in housed and grazing situations. Recognising the signs of heat stress and putting in place mitigation factors will be critical for optimum cow health and welfare.

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RoMS mobility scoring course

We are running a RoMS accredited dairy cow mobility scoring course on Tuesday 6th May at Langhill Farm, Roslin, Midlothian. To register, please contact the DHHPS office.

Parasite control in first grazing season calves

With turnout of youngstock now underway, attention turns to how best to control for parasites in first grazing season (FGS) calves, which are the cohort that are most vulnerable to parasites due to their lack of exposure. The main parasites to consider now will be Ostertagia and Cooperia (roundworms) causing parasitic gastroenteritis, and Dictyocaulus lungworm.

Prior to turnout, assess the risk posed by lungworm and roundworm on the pasture to be grazed. FGS calves should ideally go onto "low risk" pasture that has not been grazed by calves or youngstock in the previous grazing season. Where this is not possible, calves will encounter remaining overwintered larvae from last autumn, and may need a strategic worm dose to minimise further build-up of roundworm larvae on the pasture.

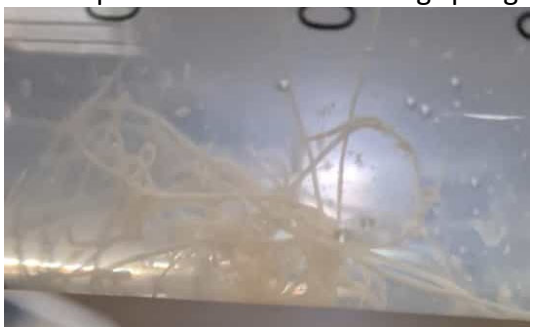
Vaccination is the most effective form of control for lungworm, and should be done before turnout. Vaccination consists of two oral doses to be given four weeks apart. The second dose should be given a minimum of two weeks before turnout, in order to allow immunity time to develop.

Pasture grazed by youngstock the previous grazing season is considered to be higher risk for roundworms, particularly where there has been evidence of high worm burdens. FGS calves going onto such contaminated pasture may need a strategic anthelmintic dose 2 – 3 weeks after turnout. Calves going onto lower risk pastures should be monitored with faecal worm egg counts (FWEC) for roundworms. Baermann tests for lungworm larvae should also be requested from the same faecal samples where farms are known to have a presence of lungworm. These faecal tests can be done on a representative sample of 10 – 12 calves. Individual tests may also be done for particular animals of concern. These tests are recommended at regular intervals throughout the grazing season. Weighing to monitor average daily liveweight gain (ADLWG) is also an effective monitoring tool for roundworm status in youngstock, and we should be targeting ADLWG of greater than 0.7 kg/day at grass.

Wormer treatments should be targeted based on discussion with your vet. As an example, the combined findings of the presence of lungworm larvae, a group average FWEC over 200 eggs per gram and/or failure to achieve ADLWG of greater than 0.6 kg/day may indicate the need for potential wormer treatment.

Options for treatment include oral benzimidazoles (white drenches), injectable or oral levamisole (yellow class), injectable or oral macrocyclic lactone (clear class). Each of these options should be effective for both roundworm and lungworm. Animals with severe clinical lungworm (for example struggling for breath, mouth breathing) will need veterinary intervention, as they may need to be treated for lung inflammation and potential secondary bacterial infection.

The need for a worm dose at housing should be assessed based on the likelihood of FGS calves having a residual worm burden from pasture. Roundworm larvae picked up in the late grazing season can become dormant in the lining of the abomasum, and can cause problems when they re-emerge at the end of the housing period. A strategic worm dose with a suitable product at housing can prevent this, and reduce larvae build-up at turnout the following spring.



Adult lungworm aspirated from the lungs