Technical Note TN634

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SAC

Ensuring good welfare for out-wintered suckler cows

Summary

- **Out-wintering pregnant spring calving suckler cows can be a very effective way to reduce costs**
- **However, the system must account for the welfare needs of the cow**
- **Adequate shelter from wind and rain must be provided to alleviate the effects of wind chill**
- **A dry lying area is essential for cow comfort**
- **If these requirements cannot be met then out-wintering is not appropriate and the extra feed required will reduce profits**

Introduction

Studies over several years at SAC and on commercial farms have demonstrated the benefits that can be obtained from out-wintering pregnant suckler cows. There are obvious reductions in housing and bedding costs and there are also benefits in the health of the cows, all of which can be obtained without a substantial increase in the costs of feeding when the appropriate forage crop and conserved fodder are used.

The key to successful out-wintering also depends on providing good conditions for the welfare of the cows. The two major challenges to welfare in this system are the effects of cold as a result of inclement weather conditions, and lying deprivation arising from the lack of a dry lying area. The Welfare of Farmed Animals (Scotland) Regulations require that:
"Animals not kept in buildings shall, where necessary and possible, be given protection from adverse weather conditions, predators and risks to their health and shall, at all times, have access to a well-drained lying area."

Avoiding the effects of cold

The thermal comfort of any animal is the balance between the heat it produces and the heat it loses to the environment. During the process of digesting and utilising feed cows produce heat and this is normally more than enough to keep them warm. The rate of heat loss from the body depends on several factors related to the cow (energy intake, live weight, condition score and coat depth) and the environment (rain, ambient temperature and wind speed). If cows lose heat faster then they can produce it from digestion and metabolism they will suffer from the effects of cold. The biggest cause of heat loss is the evaporation of water from a wet coat and this is exacerbated by the wind.

The temperature at which animals lose heat faster than they can produce it is called the Lower Critical Temperature (LCT). Ambient temperatures below this will require the cow to produce more heat to maintain her body temperature and this has to come from mobilised body fat. Out-wintering may not be suitable for cows in poor condition since this drain on resources presents a challenge to welfare. Alternatively extra feed must be supplied to make up the shortfall and this extra cost will out-weigh any management advantages.

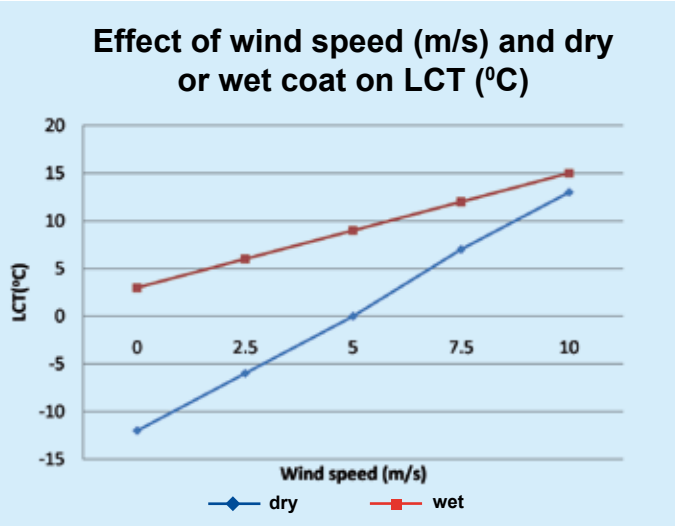


Figure 1

The Lower Critical Temperature of a pregnant beef cow can be as low as -14ºC in still, dry conditions but in wet and windy conditions this can rise to +14ºC or more. The effect of coat condition and wind speed on LCT can be seen in Figure 1 and the resulting metabolisable energy (ME) requirements for cows at an ambient temperature of 0ºC are shown in Figure 2.

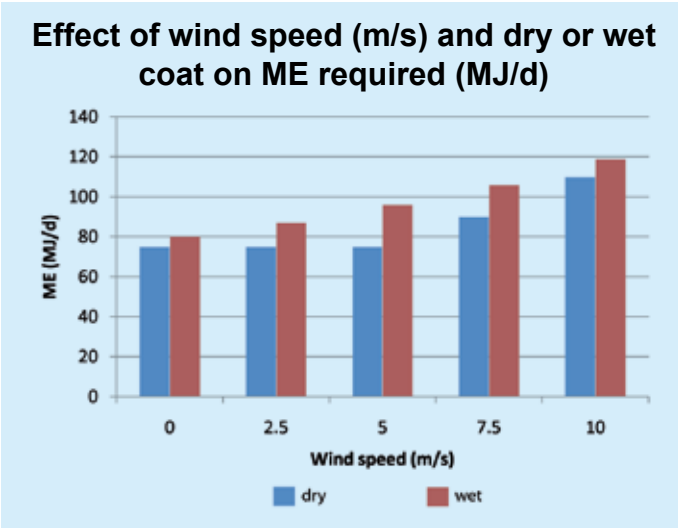


Figure 2

For wind speeds please note that 1m/s is equivalent to 2.23mph and a wind speed of 5m/s is a gentle breeze and 10m/s is a fresh breeze on the Beaufort scale.

Extra feed

As mentioned above, it may not be appropriate to meet the extra energy requirement from body reserves, particularly in thin cows and at high wind speeds/wet conditions. Although these conditions may prevail for only short periods during the day, extra feed must be supplied to meet the energy needs to combat the effects of cold (Figure 3).

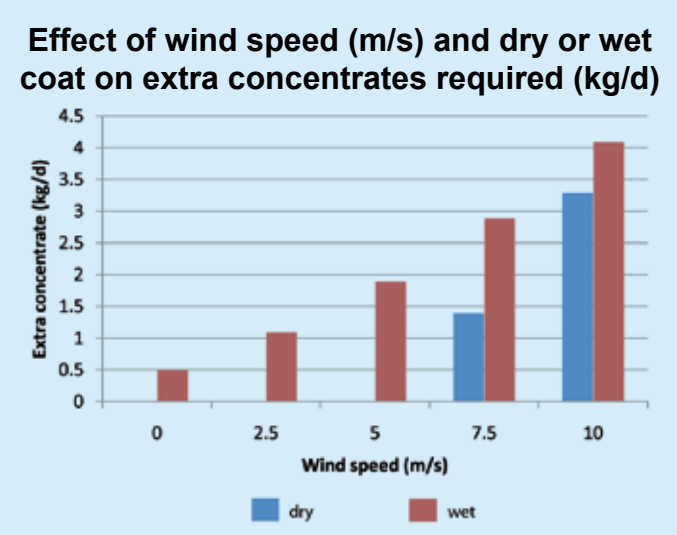


Figure 3

Troughs and ring feeders should be located in well-drained areas and moved regularly to avoid poaching.

Provision of shelter

An alternative to providing extra costly feed is to provide some shelter so that the cows can avoid the wind and the worst of the rain. Cattle naturally seek shelter from the wind if it is available and in doing so, reduce the rate of heat loss from the body and the calculated LCT is reduced. Experiments at SAC have shown that this natural shelter-seeking behaviour is sufficient to substantially reduce any extra energy demand from wet and windy conditions.

Shelter should be provided such that the cows are protected from a number of wind directions and it should extend to about 0.5 to 1m above cow height. The shelter area should be well drained and dry out quickly after rain. The shelter can take many forms: shelter belts, open areas in woodland, access to old buildings and areas in the lea of a steep hillside.

Provision of a lying area

Cattle normally spend about half the day lying. Being able to express their lying behaviour is very important to cows, so it is essential that ground conditions in at least part of the out-wintering field are suitable. This was clearly demonstrated in a study at SAC where the lying behaviour of out-wintered cows was recorded with or without access to a shed. For a period of 12 days in the middle of the experiment the ground was covered with snow. Although lying times for the two treatments were similar at other times at around 50% of the day, at the time of snow cover lying time was severely restricted to about 35% of the day in the cows that did not have access to the shed. Other studies have confirmed an inverse relationship between lying time and the moisture content of the lying surface. If cows are forced to lie down in muddy conditions the mud becomes caked to the coat and this reduces the effectiveness of the hair in insulating the cow from the effects of cold.

The need for well drained areas requires the climate and soil type to be appropriate and on some farms out-wintering should not be contemplated. Even when the soil conditions are favourable, if the weather is particularly bad for a prolonged period then the cows should be housed to avoid harm to their welfare.

Signs of cold stress

The indicators of wet conditions and possible lying deprivation are clear:

- excessively muddy coat
- churned up areas in the field

However, clear visual signs of cold stress in cows are not so obvious.

On restricted feed (as pregnant suckler cows usually are) there will be:

- a loss of condition over and above the amount normally allowed for (see below)
- the level of activity will be reduced
- cows will keep close together
- shivering may be observed.

Feeding out-wintered cows to condition score targets

Management of the annual feed requirement of the spring calving suckler cow is based on target condition scores at critical times of the year – see Appendix for details of condition scoring. Ideally the cow should be in condition score 3 at weaning and then there can be a slow loss of condition over the winter to condition score 2.25 at calving. Achieving these targets is highly dependant on correct feeding and prompt remedy of developing problems. For the out-wintered cow this is particularly important and an extra energy allowance of 10 to 15% is commonly applied to ensure there is sufficient energy to combat possible periods of cold demand. One unit of condition score is around 13% of body weight so for a 650kg cow starting at condition score 3 the loss of condition over the winter equates to a weight loss of 0.4kg/d. Pregnancy requirements increase exponentially towards calving and if the requirement is set at 8 weeks before calving a flat rate can be fed through the winter. This translates into a metabolisable energy (ME) requirement of around 75MJ/d. For cows that are out-wintered the extra allowance translates to a requirement of around 85MJ/d.

Conclusions

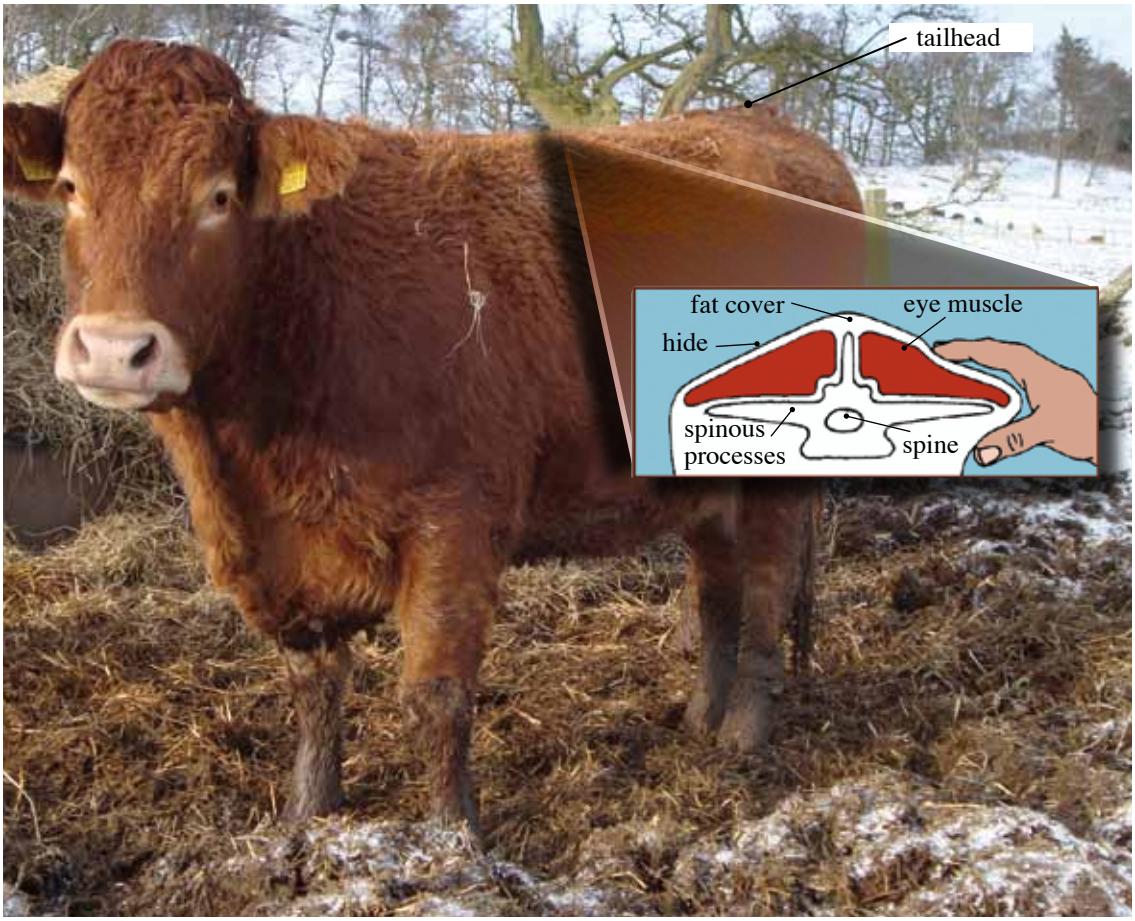
If the production benefits of out-wintering are to be achieved it is essential that conditions are not detrimental to the welfare of the cows. Some form of shelter (natural or artificial) must be provided to allow the cow to combat the effects of wind chill and a well-drained dry area is essential for comfortable lying. The condition score of the cows should be monitored and the amounts of feed should be adjusted well in advance to ensure that cows are at the appropriate condition score at calving.

Appendix – Condition Scoring

Condition score is a simple assessment of how much flesh, and in particular fat, the cow is carrying based on a 5 point scale. The condition scoring system is based on handling two areas of the cows to assess the level of fat cover – the loin area (between the hip bone and the last rib) and around the tail head. Handling the cows is important – do not rely on visual appearance.

An easy way to start condition scoring is to select a number of cows in the herd (about 10 – 20%) and to keep a note book to record monthly the condition score of each animal. This will identify any developing trends in body condition change and allow the comparison of the herd with the target condition scores. Then timely changes in feed allowances can be made to bring the cows back to the target condition score. It is far better to make such adjustments over a long time period rather than leaving it until the last minute when it may be too late to achieve the scale of change required.

Condition Score 1: The individual spinous processes are sharp to the touch and easily distinguished.
Condition Score 2: The spinous processes can be identified individually when touched, but feel rounded rather than sharp.
Condition Score 3: The spinous processes can only be felt with very firm pressure and the areas on either side of the tail head have some fat cover.
Condition Score 4: Fat cover around the tail head is easily seen as slight mounds, soft to the touch. The spinous processes cannot be felt.
Condition Score 5: The bone structure of the animal is no longer noticeable and the tail head is almost completely buried in fatty tissue.



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