DAIRY HERD HEALTH & PRODUCTIVITY SERVICE

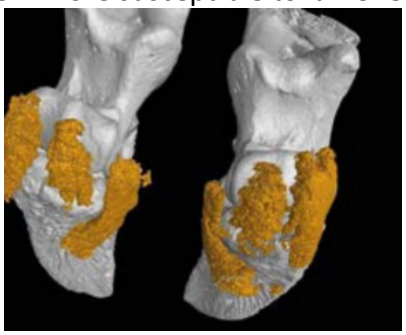
Newsletter 2020, Q2 May 2020

1st Lactation Dairy Heifers: why are they at a higher risk for lameness?

The importance of lameness in first lactation dairy heifers is increasingly recognised. A first occurrence of lameness increases the future risk of lameness; therefore, lameness in dairy heifers has the potential to have a severe impact on overall lifetime performance within the herd.

The Digital Fat Pads in the Hoof

Along with the elastic horn in the heel, the fat pads act to cushion and dissipate force during walking and standing. It plays a vital role in protecting the pedal bone and soft tissues of the sole from being damaged as the cow walks. A dairy animal's fat pad is usually not fully developed until her 2nd lactation, and this is important to bear in mind when considering how heifers are managed on your farm as this can make them more susceptible to lameness.



*CT images of the three cylinders of fat under the pedal bone (in yellow) Ref: Newsome et al., 2017 Journal of Dairy Science **100** pp4745–4758*

It has been shown in research studies that cows with thinner fat pads are more likely to have claw horn lesions such as sole ulcers, haemorrhages and white line disease. When cows lose body condition, they begin mobilising fat from all areas of the body including the fat pad in the cow's hoof.

Therefore, low body condition scores (BCS) or excessive loss of body condition are significant risk factors for lameness. It has been shown when dairy animals lose in excess of 0.5 BCS they have double the risk of becoming lame.

Associated Stress & Increased Standing Times

The transition period around the time of calving has been identified as an important risk period for lameness occurring in heifers. Many big changes occur in a relatively short time period for your heifers (and cows), and managing these changes well is key for minimising stress:

1) Stress related to physiological changes such as calving and lactation
2) Social factors with the associated animal group movements.
3) Changes in housing accommodation itself (for example, heifers moving from dry cow straw yards to the milking cow cubicles).

Heifers: the plan

It is vital that heifers are cared for well, especially at integration precalving and at calving. Ensuring good heifer (and cow) lying times (ideally over 12 hours a day) is one key goal:

- Cubicle train as maiden heifers
- Target optimal BCS at calving and minimise weight loss
- Mix with dry cows 3 – 6 weeks precalving
- Provide ample feed space (min. 60cm/cow)
- Use high comfort cubicles or straw yards
- Treat lameness early

Considering your own farm's dairy heifer management and housing practices around the time of calving could be well worthwhile.

DHHPS services during COVID-19

We are operating a reduced service during the current coronavirus situation, but at present we are still accepting and analysing blood samples. DHHPS@ed.ac.uk is the best way to contact us, and this email address is looked at daily.

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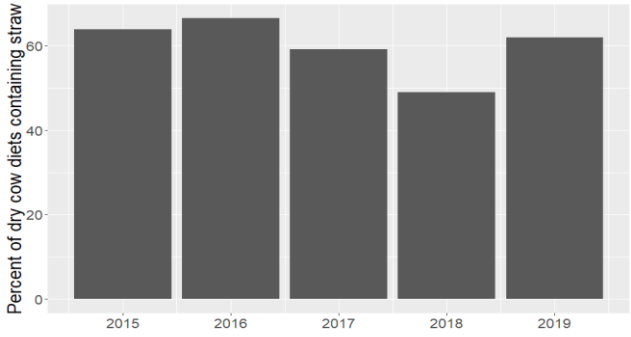
Straw feeding in dry cow rations

It has been known for some time that maximising Dry Matter intakes in the run up to calving is essential to avoiding excessive negative energy balance in early lactation. The importance of maintaining rumen capacity during the dry period cannot be overstated. However, due to the modest energy demands of pregnancy, dry cows with high energy intakes are at risk of gaining excessive body condition.

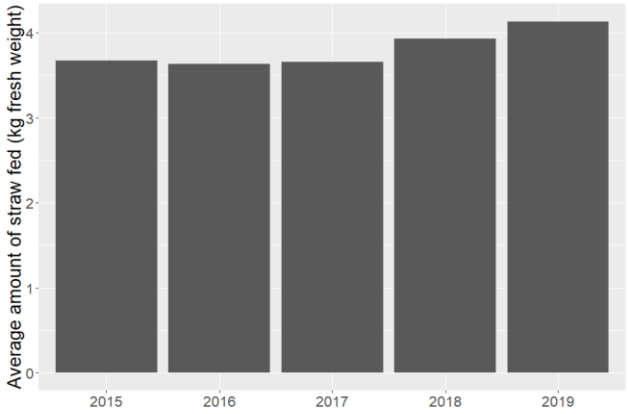
A number of studies have shown that over-feeding energy during the "far off" dry period does more harm than good, leaving cows at risk of diseases such as fatty liver disease. With this in mind, straw feeding during the dry period has become popular as a way of maintaining rumen fill, whilst avoiding excessive gains in body condition.

Whilst this can be a highly effective strategy, straw can have a negative impact on palatability and increase sorting, resulting in reduced dry matter intakes. When interpreting DHHPS metabolic profile results, it is not uncommon for us to question straw preparation as a cause of poor transition period energy balance.

We have also noticed an increase in the amount of straw included in dry cow rations. To explore this in more detail, we analysed the 1288 dry cow rations we looked at between 2015 and 2019. As you can see below, the proportion of herds feeding at least some straw has remained relatively stable at around 60%. The obvious exception to this is in 2018, where this dropped to under 50%. However, with straw prices peaking at £90-100/tonne in the summer of 2018, this is hardly surprising.



What is interesting is that the average amount of straw fed remained relatively stable at 3.7 kg fresh weight (FW) between 2015 and 2017, but the figure below shows that straw feeding increased by 0.5 kg over the past couple of years. This would suggest that feeding increased amounts of straw is becoming more popular.



Given the increased amount of straw being fed to dry cows, it is worth reviewing best practice to ensure that intakes and energy balance do not suffer. Recent work from Canada can help in this respect (Journal of Dairy Science 2020, 103(1):254-271). This compared intakes and energy balance in dry cows fed two diets consisting of 36% maize silage, 29% wheat straw and 35% concentrate (on a DM basis), with the only difference being the straw length: chopped using a 10.16 cm versus 2.54 cm screen. The groups achieved Dry Matter intakes of 15.0 and 15.6 kg respectively (equivalent to 5.0-5.2 kg straw FW). However, intakes in the last week of pregnancy dropped faster and more dramatically in the 10.16 cm group, who also had worse energy balance in the third week of lactation.

With this in mind, when feeding straw to dairy cows, we recommend meticulous storage and preparation:

- Wheat straw is preferable to barley straw
- Ensure that straw is kept **dry** and is of good quality
- Always pre-chop straw prior to adding to the mixer wagon. Target chop length of 0.5-5.0cm
- Monitor total ration dry matter and add water if the ration does not bind well
- Ensure at least 80cm/head trough feed space

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