Strategy Document 2013

A Strategic Review of UK Dairy Farming's priorities for R &D and Knowledge Exchange for 2013-2020

Animal Health and Welfare Subgroup - Terms of Reference;- "How to measure Health and Welfare at both individual and herd level"

Introduction

Animal welfare is often cited as being of paramount importance, and we know it is linked to health and productivity. But how do we "measure" welfare, either within a production system, or across production systems, and from whose perspective – that of the cow, the farmer or the consumer? The definition of animal welfare is about the animal first and foremost – so it must be agreed how we assess the animals' perspective. Similarly, how do we "measure" welfare across different disease scenarios – is having a transient case of acute mastitis worse or better than having a chronic foot ulcer? We believe that objective and comparable measures are needed, and for the purposes of this paper we will consider only the dairy system.

Recent research from the Institute of Grocery Distribution (IGD) published in July 2011 shows that animal welfare is very important to roughly half (48%) of British grocery shoppers when deciding to buy; and the trend towards higher welfare standards has been sustained throughout the economic downturn. The proportion of shoppers claiming to have specifically bought a product with higher animal welfare credentials has almost doubled over the last four years. Recently, the popular press carried an article ranking the farm assurances schemes according to their perceived welfare credentials, and suggested that food carrying the lowest ranking label should be avoided.

The wider industry accepts the importance of this issue; for example the next generation of Red Tractor farm standards for dairy are going to encapsulate a range of welfare indicators - discussions are taking place to decide what these may cover.

So we believe that there are key questions that need to be clearly answered and that the Dairy Science Forum should take a role in encouraging the resourcing, integration and delivery of this research;-

What is the ultimate measure of welfare?

If welfare is to have any meaning (for the cow), it has to be about the cow's response to experience, which is difficult to measure, but is likely to be related to her health and to a lesser degree her productivity. Although often cited, we don't think high yield is the best measure – some cows seem to be programmed to produce milk whatever their experiences. There are currently efforts to put together algorithms that include age, parity, yield, milk constituents, fertility parameters (which ones can be debated), incidence and severity of disease (again which diseases are more important?). But longevity is also a useful measure, if a cow continues to be productive over 10 years without being culled then her health and care must be 'acceptable'. Average numbers of lactations in the national herd has started to improve as a result of the adjustments being made in traits related to cow welfare, aiming for better fertility, reducing incidence of lameness, less metabolic stress, etc. In the future and with biometric sensors (such as variations in body temperature, rumen pH, cudding rates, lying times etc) and more accurate recording of health status (such as immune state, incidence rates, hormone concentrations etc) we should be able to properly define welfare in a variety of ways.

Are some measures of welfare anthropomorphic?

Public perception appears to have been influenced to already conclude, "large is not good", and this seems to be based on anthropomorphic comparisons with battery hen and intensive pig rearing systems and what the public perceive happens to cows in large herds. By contrast, the public generally want cheap food, a concept that encourages the development of larger scale units to achieve greater efficiencies. There is a need for a "big conversation" which highlights the real issues about larger units and the benefits such as: specialisation of staff, (e.g. calf rearers, dedicated calvers, on-farm vets), and specialist facilities (e.g. intensive care and isolation areas) which should improve health management. There must be discussions about what is "normal" behaviour for a cow, and about what cows will choose to do, or how they will behave depending on the options available and their particular physiological state. But we need to relate our understanding of welfare to the domesticated dairy cow, while appreciating her ancestors as plains, or even forest, living animals. For example, modern cows may be happier lying dry inside on mattress or sand cubicles with ad-lib bunker feed than grazing on a cold wet Cumbrian hill. And a dialogue is required about the role, method and reasons for culling cows in the modern dairy system – and how does this interact with welfare, particularly in the public's mind? Diseases such as lameness will continue to occur, but we must manage the public's expectation and opinion as much as treating the animals (e.g. don't send straggling lame cows through the local village). How much is fact and how much is public perception, therefore, becomes an education issue. Hopefully, we are adding to the facts....but we are not sure if farmers/vets would really like the public to know the real situation on some units!

To what extent can genotype over-ride the environment?

We suspect that many high-genetic merit cows will continue milking until they tip over the edge, and other organs/systems fail, such as the liver, or the reproductive system. This may be a result of previous selection policies aimed primarily at increasing yield that appear to have altered nutrient partitioning in modern cows such that producing milk has a higher metabolic priority than most other functions. This has led to cows producing even more milk when better fed even though they are thin – they partition the available nutrients to milk rather than gaining body fat. The phenomenon of mobilising body fat to support early lactation is common in mammals leading to cyclical changes in fatness. This has been exploited by farmers to produce milk at different times of the year when feed prices are high. However, previous selection policies may have inadvertently pushed fat mobilisation too far, resulting in some fertility and metabolic problems. More recently, these issues have been addressed and fertility is now improving in dairy cattle. Thus, the answer to the paragraph question is 'yes' – genotype can override the environment (or perhaps more accurately genotype can limit the influence of the environment)

What welfare issues are of most importance to youngstock?

Again, "normal behaviour" might include seeking shelter from driving rain behind a wall. But a calf is likely to prefer to be in a hutch, and even better in a hutch with a few cohorts. Albeit they are in a restricted space, they are likely to be dry and comfortable, not hungry or thirsty and able to express most normal behaviours. Although the most natural normal behaviour is to be suckled by your mother for several months, this can be mimicked by (for example) ad-lib milk feeders, so further work is needed to address whether early weaning is actually a welfare issue from the calf's perspective.

Are there chemical markers of "stress" – If so what are they?

It is unlikely to be this simple – cortisol and adrenalin are often suggested as measures, but a bit of both of these are good for all mammals! And it is probably much more complex than this - for example, evidence is available to support the theory that changes at the hypothalamic–pituitary–adrenal axis reduce expression of oestrus. And behavioural changes may be just as significant and measurable stress indicators as chemicals.

Is welfare only associated with stress?

For example, is an apparently healthy animal 'non-stressed' and is an animal provided with all food/shelter/etc not under stress?. Indeed, they may not be displaying 'normal behaviour' i.e., most animals would spend the majority of the day looking for food – are they less-stressed if abundance is provided 'on a plate'....but they are not able to display 'normal' behaviour. What is normal behaviour to a domesticated animal and if an animal is unable to display their full behavioural repertoire within a building, does that matter? Thus, we must consider how we utilise behaviour to better understand welfare and choose the right measure in various situations. Altered behaviour may result in better welfare but no longer be typical of the animal (domesticated dogs are a good example). Altered behaviour may be more an ethical rather than a welfare issue. Cows seem to find group changes very stressful, as evidenced by a drop in milk yield, more metabolic disease, disturbances in parturition, etc. – how can that be assessed and if necessary, avoided?

Pain is usually the primary consideration, but welfare will also be compromised if a cow does not experience the other four Freedoms;- hunger and thirst, discomfort, fear, and to express normal behaviour.

When (if ever) does sub-optimal production become a "stress" or a welfare issue? Is optimal production in itself a "stress" – as in top athletes? Well that depends on the definition of "optimal" and from whose perspective!

Conclusions

- **For the cow: There is a need for objective definition and measurement methods of welfare and stress in the modern dairy animal, and to provide methods of bench-marking individual farm performance across diseases and across husbandry systems.**
- **For the farmer: There is a need for training to understand that good welfare is not a cost**
- **For the consumer: There is a need for information exchange to alter perceptions that may be based on assumptions and on anthropomorphic comparisons.**