

# Organic and non-organic farming: implications for dairy cattle health and welfare

By Melissa Rigby

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## Introduction

There is societal concern about the moral and ethical treatment of animals, especially production animals (Rollin 2004). Two major welfare issues for dairy cattle are lameness and mastitis, as these cause severe pain, weakened body condition and restriction of normal behaviour expression (Bell *et al.* 2009; Fall *et al.* 2008). In line with public concerns over animal welfare, the demand for organic produce is increasing, as it is perceived to provide farm animals a better quality of life (Lund 2006). As such, an increasing number of dairy farms are turning to alternate practices such as organic farming (Langford *et al.* 2009). Claims of improved animal welfare can be easily made, however, they are often hard to substantiate. Over the past year a number of studies have been published comparing organic farming to conventional or non-organic farming. Three studies in particular have challenged the perception that organic farming has a beneficial effect on dairy cattle welfare. In this paper these studies will be integrated to compare organic and non-organic farming in relation to dairy cattle lameness and mastitis.

## Discussion

The International Federation of Organic Agriculture Movements (IFOAM) states organic husbandry focuses on improving animal health and preventing disease through a holistic approach, thus eliminating or minimising use of synthetic medicine (Hansen & Sjouwerman 2007). However, the elimination of synthetic medicine raises the issue of whether cows suffering prolonged exposure to disease have reduced health and welfare (Hovi *et al.* 2003). Langford *et al.* (2009) investigated this by looking at differences between organic and non-organic dairy farms in the UK, with a focus on the health and welfare implications. Forty randomly-recruited organic and forty non-organic farms matched on housing type, herd size, milk production and location were surveyed. Farms were visited in autumn and spring, when farmers completed a face-to-face questionnaire about management and health practices on the farms.

As hypothesised the treatment of disease occurred differently between farm types. The majority (82.5%) of organic farmers treated early stages of mastitis with alternative remedies. Antibiotics were used when symptoms worsened or took a long time to clear. These farmers believed that 57.5% of mastitis was cured without antibiotic use. All non-organic farmers used antibiotics for cases of mastitis and believed that mastitis could not be cured without antibiotic use. No difference was found between the perceived incidence of mastitis on organic and non-organic farms. Thus the authors concluded that there was no fundamental difference in the level of mastitis between farm types, this is supported by Fall *et al.*s (2008) study that will be discussed later. Similarly, there was no difference in the reported rates of lameness between farms in the Langford study. However, conflicting results were found in a separate component of this study (Rutherford *et al.* 2009), which will be discussed below. The authors concluded that while disease treatment on organic farms was not compromised by IFOAM regulations, cow welfare was not noticeably better on organic farms. The results, however, could harbour perception bias as they are based on farmers' recall of information not clinical data.

Rutherford *et al.* (2009) endorsed the welfare benefits of organic management principles that emphasised a reduction in stress, lower stocking density, less intensive focuses and better housing. This study aimed to directly compare the prevalence of lameness on organic and non-organic farms, while identifying specific risk factors. Their study was an extension of Langford *et*

*al.*'s (2009) study and as such used the same forty paired organic and non-organic farms. On each farm lameness was assessed using locomotion scoring by trained observers. Locomotion was scored, as cows left the milking parlour at morning or afternoon milking, using a four-point scale (1. Normal walking, 2. Mild deviation from normal walking, 3. Gait abnormality, 4. Lameness).

The major finding of the study was that organic farms were associated with fewer lameness problems. It was also found that the most significant factor affecting lameness was lactation number, with older cows more likely to be lame. In addition, housing in straw-yards and spending more time grazing on pasture minimised herd lameness. The authors attribute these findings to specific factors associated with organic farming, such as delayed breeding and longer summer grazing. However a potential flaw in this study is the level of overlap between farm types.

The final study conducted by Fall *et al.* (2008) aimed to test whether udder health differed between organic and conventional farms under similar management. Data for this study originated from a 12-year project (1990-2001) carried out at Öjebyn research farm in north Sweden. The 170-ha farm was divided into two separate systems, organic (managed according to KRAV, Swedish organic certification association) and conventional. The organic farms allowed daily outdoor exercise all year round, fed at least 95% organically produced feed and did not exceed 40%-50% dry matter feed. Both groups had similar tie stall housing and the same milking routine.

The study found that there was no significant difference in udder health between the two farm groups, although the findings may be limited by the small sample size. Other studies show varying results including; better udder health on organic farms (Hamilton *et al.* 2006), no difference (Hovi & Roderick 2000) and higher levels of mastitis on organic farms (O'Mahony *et al.* 2006). The discrepancies in the above studies make it difficult to draw conclusions about the effects of organic farm management on udder health. Nevertheless, differences in management routines may be relevant and require further investigation.

## Conclusion

These three studies each have implications for dairy cattle in terms of animal welfare. The studies endeavour to improve understanding of organic dairy farming in relation to lameness and mastitis. While overall, findings were not conclusive it was established that specific organic farming practices, such as longer grazing periods and delayed breeding, are beneficial to dairy cattle welfare. Changes to management routines may have greater impact than organic farming *per se*. To ensure continued improvement of cow health and welfare, more research is required to investigate organic farming practices and their implications for cattle lameness and mastitis.

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