

# ORGANIC DAIRY COWS

## HEALTH AND WELFARE

*By Jane Morrigan*

**A cold glass of organic milk... If this sounds quite appealing on this Canadian summer day, you are not alone.**

**T**he number of organic dairy farms is on the rise across Canada, coinciding with growing consumer interest in the humane treatment of food animals and in organic dairy products.

As the Canadian organic dairy industry grows, production and welfare challenges are being met head on. Canadian researchers are studying how production practices can affect cow health, welfare and milk quality. Welfare is connected to cow comfort and production; the physical and mental well being of dairy cows is intrinsically linked to their quality of life and longevity.

Canada's Organic Science Cluster (OSC) has undertaken several objectives as part of a large dairy study led by Dr. Trevor DeVries at the University of Guelph. One objective is to assess the health and welfare of dairy cows. Another is aimed at identifying common mastitis pathogens and their incidence. The findings will help farmers choose techniques that optimize cow health and milk production. It will also establish benchmarks (points of reference) that can be used by producers and researchers to track improving or deteriorating herd management practices.



The study has collected data from 59 dairy herds in Southern Ontario; 41 are conventional (12 providing pasture to their lactating cows, 29 having no pasture access) and 18 are certified organic. Comparisons have been made, not only between conventional and organic, but also between herds having pasture access versus no pasture access, and those being housed in free-stall, tie-stall and pack barns.

### **Opportunities for improvement**

Preliminary findings presented by OSC post-doctoral researcher Dr. Anita Tucker reveal that dairy farmers, including organic farmers, can improve the following:<sup>1</sup>

#### **1. Body condition of cows**

Using the standard scoring system of Score 1 being thin to Score 5 being fat, organic dairy cows had an average Body Condition Score (BCS) of 2.27. Ideal scores range from 3 to 3.5, but the average of both conventional and organic herds in this study were both below this level.

## 2. Hock lesions

Cows housed in tie-stall barns had more lesions than cows in free-stall barns. Hock lesions are sores on the middle joint of a cow's hind leg. The sores range from hair loss to open lesions and swollen joints. These can be painful and can be caused by poor stall management and design. Features such as insufficient bedding, narrow lying areas and poorly placed rails can affect the incidence and severity of hock lesions.

## 3. Cleanliness of cows

Cow cleanliness or hygiene is generally considered a good indication of the general cleanliness of the cows' environment. Poor hygiene is associated with diseases such as mastitis. The study found that cows in free-stall barns were not as clean as those in tie-stall barns. Overall, cleanliness scores could have been improved for cows in both free-stall and tie-stall barns.

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Once all of the data has been analysed, and correlations made, it is hoped that this OSC research will help both organic and conventional practitioners to improve their management practices.

## Animal welfare

### Raising heifer calves

The common conventional practice is to separate the newborn calf and dam almost immediately after calving. However, at the University of British Columbia (UBC),



*Holsteins in tie-stalls.*

Dr. Dan Weary and colleagues found that a dairy heifer calf gains weight three times faster if she is kept with her mother for up to two weeks after birth. This practice does not affect the cow's total milk yield. They have also demonstrated that dairy calves can be successfully reared in groups, without cross-sucking problems and with no increase in disease.<sup>2</sup> \*

### Pain control for disbudding and dehorning

Another focus of Weary's research is pain reduction for procedures such as disbudding and dehorning dairy heifer calves.\* His research has shown that disbudding/dehorning should be done between two and three weeks of age. Recommended methods include either a hot-iron dehorner or the application of caustic paste

to the horn bud. Pain control can be provided by:<sup>3</sup>

1. Administering a sedative to the calf 20 minutes before the procedure; followed by
2. A local anaesthetic such as lidocaine 5–10 minutes before the procedure (not necessary for caustic paste method), and finally
3. A non-steroidal anti-inflammatory drug (NSAID), such as meloxicam, to provide pain relief for several hours following the procedure.

### Gentle handling at milking

Drs. Jeff Rushen, Anne-Marie de Passillé and colleagues with Agriculture and Agri-Food Canada in Quebec and B.C. have studied animal welfare over the last three decades. They compared the effects of gentle versus rough handling during milking on milk yield. They found that milk yield was higher for cows who were handled gently during milking.<sup>4</sup> In addition,

\* See [www.oacc.info/AnimalWelfare/aw\\_awtf\\_factsheets.asp](http://www.oacc.info/AnimalWelfare/aw_awtf_factsheets.asp)

cows handled gently had significantly lower heart rates and there was less milk left in the udder at the end of milking.

### **Housing design and behaviour**

At UBC, Dr. Nina von Keyserlingk has been designing better environments for dairy cows for several years. She has expanded our understanding of cow behaviour and helped producers design suitable housing and management systems. Her research has shown that because cows synchronize the behaviours of feeding and lying down, there must be sufficient space for all cows to feed and/or lie down at the same time. Keyserlingk has also shown that (1) providing more space per cow at the feeding bunk reduces aggressiveness and increases feeding activity, and (2) providing a rubber floor surface may reduce lameness.<sup>5</sup>

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### **Lameness in dairy herds†**

Lameness in dairy cows occurs at an average rate of 25% in Canadian dairy herds, and is a major welfare issue.† Lameness causes pain (sometimes severe), and contributes to reproductive infertility, a loss of milk yield, high vet bills and more culling. Dr. Rushen and his team have shown that lameness can be caused by:<sup>6</sup>

- stalls being too small;
- concrete floors being rough or broken;
- poor drainage of water on floors in the barn and milking parlour;

- manure on floors;
- rough handling of nervous cows;
- feeding too much grain (as opposed to more forage) in cow rations; and
- poor hoof health as a result of inadequate trimming.

### **Heat stress†**

Dr. Tina Widowski from the Campbell Centre for the Study of Animal Welfare at the University of Guelph studies heat stress. She emphasizes that heat stress in lactating dairy cows can occur at temperatures above 23°C, and that humidity, direct sun and low air-flow increase the risk of heat stress. She cautions that heat stress can reduce milk production by 10–25%, especially in high-producing cows.

Signs of heat stress in dairy cows include reduced feed intake, rapid shallow breathing, panting, a reluctance to move, lack of coordination, trembling, and increased water intake. A lactating dairy cow requires at least 10 gallons of fresh, clean water per day when the temperature is 20°C, and 32 gallons per day at a temperature of 35°C.

Preventing heat stress can be accomplished first and foremost by providing shade, and a supply of cool, clean water provided in a shaded location. There should be one watering station for every twenty cows, with a minimum fill rate of 3–5 gallons per minute.<sup>7</sup> In addition, Widowski recommends increasing air flow; installing sprinklers in waiting areas; avoiding stressful handling; reducing populations of biting flies; and providing high quality forage in shaded bunks on a free choice basis.<sup>7†</sup>

† See [www.oacc.info/AnimalWelfare/aw\\_awtf\\_factsheets.asp](http://www.oacc.info/AnimalWelfare/aw_awtf_factsheets.asp)

## **Dealing with disease**

### **Managing mastitis**

Dr. Léna Levison, a veterinarian who has temporarily left her clinical practice to obtain a Master's Degree at the University of Guelph, is participating in the OSC study led by Dr. DeVries. Her focus is on preventing mastitis, specifically intra-mammary infection.

Mastitis in lactating cows can lower milk production, reduce milk quality and affect cow welfare by causing pain and discomfort for the infected cow. Mastitis is a significant problem and is one of the main reasons that dairy cows are culled from herds. Because organic dairy producers are restricted in their use of antibiotics, it is very important for farmers to know which management practices help prevent or minimize mastitis.

Levison's research involves identifying common pathogens in mastitis samples collected from infected cows. She is investigating the connection between these pathogens and management practices, including the type of housing (i.e., free-stall, tie-stall or pack barns). So far, the three top mastitis pathogens that have been identified from the samples collected by farmer participants at levels sufficient to cause intra-mammary infections are *Staphylococcus aureus*, *Streptococcal* spp., and Coliforms (such as *E. coli*).<sup>8</sup>

### **Johne's disease**

Johne's disease is a chronic, debilitating intestinal disease affecting cattle and other ruminants. It has become more prevalent in dairy herds in Canada during the last decade. Newborn calves are especially susceptible and can become infected by ingesting feces, milk



or colostrum from infected cows. Unfortunately, there is currently no reliable positive test for Johne's disease, and no known cure.

Dr. Laura Pieper of the Department of Population Medicine at the University of Guelph and her colleagues explored the question of whether organic dairy herds are more susceptible to Johne's disease compared with those on conventional dairy farms. Organic farms may be at greater risk because of the organic practice of keeping a newborn calf with her mother, or with a foster cow, for an extended period of time. (As mentioned earlier, the common conventional practice is to separate the newborn calf and dam almost immediately after calving.)

Seventeen organic dairy farms had their milking herds tested for Johne's antibodies. The data were compared with those collected from conventional dairy herds of similar size. Preliminary results showed a low prevalence of the disease in both organic and conventional herds. However, the study found that veterinarians consider organic herds to be at higher risk for Johne's disease transmission in the calving pen.<sup>9</sup>

## Conclusion

Canadian dairy research provides organic and conventional dairy practitioners with sound advice about management strategies, which they can use to improve the welfare of their dairy cows and the quality of the milk they produce. Let's all raise a glass of organic milk in thanks!

*The Organic Science Cluster projects described in this article are funded by Agriculture and Agri-Food Canada.*

*Photo credits: Janet Wallace (pg. 44 – a healthy heifer calf from B.C.'s Moonstruck Cheese herd), Jane Morrigan (pg. 45)*

## References

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