

# Research Summaries 3

## Dairy cow well-being on large, high-performance Wisconsin dairy herds

**R.L. Brotzman, DVM; D.D. Döpfer, Dr. med. vet. DD MSc PhD Dipl. ECBHM; M.R. Foy; J.P. Hess; K.V. Nordlund, DVM; T.B. Bennett; N.B. Cook, BSc BVSc Cert. CHP DBR Dipl. ECBHM, MRCVS**  
*Food Animal Production Medicine, School of Veterinary Medicine, University of Wisconsin, Madison, WI 53706*

### Introduction

The emergence of confinement-housing facilities for large herds of dairy cattle has been associated with increasing concerns for animal welfare from consumer groups and animal activists. Some believe that lowered production from grazing and the cessation of production-enhancing technologies, such as bovine somatotropin (BST) and monensin sodium, is healthier for the cow and results in a healthier, safer food product for the consumer. The Food Animal Production Medicine section at the School of Veterinary Medicine, University of Wisconsin-Madison, has been researching and working alongside Wisconsin farmers for over a decade to help build and remodel dairy cattle housing that promotes health, well-being and productivity, resulting in successful herds and farmers. The Dairyland Initiative was formed to spread these efforts further within the state and beyond its borders. This study tests the hypothesis that large, high-producing dairy herds have excellent standards of animal well-being by auditing herds for select measures of well-being along with herd housing and management characteristics.

### Materials and Methods

DHI data for year 2011 were obtained for 557 Upper Midwest herds that had remained on-test for the entire year and had a test day mean  $\geq 200$  cows. Twenty-two variables were selected and reduced to 16 through principle component analysis (PCA) that described above average variance in performance between herds. The PCA-selected variables were used to allocate farms into 6 groups by means of cluster analysis (CA). Groups 1, 2, and 6 had higher mean performances in selected variables than did Groups 3, 4, and 5. Twenty-two herds from each of groups 1, 2, and 6 were visited from June to mid-August, 2012. Farms were randomly and proportionately selected from counties in a band from southwest to northeast Wisconsin, where the majority of the 557 large dairy herds were located. Data were collected regarding welfare, housing, and management practices. Objective

welfare indicators were assessed in the highest-production, mature cow group on each farm and included hock and carpal injury scores; prevalence of back, hock, and pin injuries (BACK); and locomotion scores. In herds where the mature cows were kept in several groups, measurements from multiple groups were collected to ensure that a minimum of 30% of mature cows were assessed. Survey findings were summarized overall and by group.

### Results

Preliminary analysis indicated that the mean  $\pm$  SD prevalence of clinical lameness for all surveyed herds was 13.2%  $\pm$  7.3%, with herds that were bedded on sand (11.2%  $\pm$  5.8%) having a numerically lower prevalence of clinical lameness than did herds that were bedded on mats or mattresses (17.4%  $\pm$  9.0%). Mean  $\pm$  SD prevalence of hair loss over the hock was 38.2%  $\pm$  19.3% (29.5%  $\pm$  16.8% for sand-bedded herds and 53.2%  $\pm$  14.0% for mat or mattress-bedded herds), prevalence of swollen or ulcerated hocks was 12.2%  $\pm$  15.3% (4.03%  $\pm$  3.73% for sand-bedded herds and 29.4%  $\pm$  17.3% for mat or mattress-bedded herds), and prevalence of carpal swelling or ulceration was 6.2%  $\pm$  5.5% (5.19%  $\pm$  3.17% for sand-bedded herds and 8.27%  $\pm$  8.44% for mat or mattress-bedded herds). BACK injuries were uncommon (mean  $\pm$  SD prevalence, 3.62%  $\pm$  3.4%). Future work will model measurable well-being outcomes against housing and management characteristics to identify which practices should be promoted for improving dairy cow well-being while maintaining high herd performance.

### Significance

While clinical lameness prevalence on large, high-producing dairy herds is low, hock and carpal injuries were relatively commonplace in some systems (mats or mattresses) and may indicate opportunities for improvement in stall design. Research and outreach messages on facility and stall design, and management for the benefit of cattle and the farmers that care for them are being heard and implemented in the study region.