

OHIO STATE UNIVERSITY EXTENSION



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In This Issue

News

- [New Veterinary Extension Specialist](#)

Research

- [Genomic selection for producer-recorded health event data in US dairy cattle](#)
- [Survey of facility and management characteristics of large, Upper Midwest dairy herds clustered by Dairy Herd Improvement records](#)
- [An investigation of the dynamics of intramammary infections acquired during the dry period on European dairy farms](#)

Calendar

- [Farm Science Review](#)
- [ODHMCP](#)
- [Organic Livestock & Poultry Health Series](#)



News

New Veterinary Extension Specialist

Dr. Katy Proudfoot has added an Extension appointment to her duties and will serve as an Extension Specialist in Animal Welfare & Behavior. She joined the Department of Veterinary Preventive Medicine as an Assistant Professor in October of 2013. Her research focuses on the behavior of dairy cattle and how to improve management and housing. For her Extension program, Dr. Proudfoot will work with clientele to establish sustainable, herd-specific programs that improve animal

welfare and help make their products more marketable to the consumer.

Dr. Proudfoot is originally from California and completed her PhD at the University of British Columbia in Applied Animal Biology. Dr. Proudfoot can be reached at proudfoot.18@osu.edu

Research

Parker Gaddis, K. L., Cole, J. B., Clay, J. S., & Maltecca, C. (2015). **Genomic selection for producer-recorded health event data in US dairy cattle.** *Journal of Dairy Science*, 97(5), 3190-3199. doi: 10.3168/jds.2013-7543

BACKGROUND: Increasing dairy cow production and profit is negatively correlated with health and fitness traits. Genetic selection is appealing for improving health traits, but no required or consistent recording system for health traits currently exists in the U.S. Health traits are typically categorized as being lowly heritable. Low sire reliabilities are also common for health traits due to a combination of low heritability and limited availability of phenotypes. Current research in genomic selection is mostly focused on traits related to production.

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PURPOSE: The objective was to perform pedigree- and genomic-based analyses on producer-recorded health data to estimate variance components and heritabilities for health traits commonly encountered by dairy cows in the United States, thereby confirming a genetic component of major health events. A single-step analysis was conducted to estimate genomic variance components and heritabilities for health events, including cystic ovaries, displaced abomasum, ketosis, lameness, mastitis, metritis, and retained placenta.

RESULTS: The single-step genomic analysis produced heritability estimates that ranged from 0.02 (standard deviation = 0.005) for lameness to 0.36 (standard deviation = 0.08) for retained placenta. Significant genetic correlations were found between lameness and cystic ovaries, displaced abomasum and ketosis, displaced abomasum and metritis, and retained placenta and metritis. Sire reliabilities increased, on average, approximately 30% with the incorporation of genomic data.

CONCLUSIONS: The researchers concluded that this study demonstrated the potential for genetic improvement of health traits using producer-recorded data. Health traits were lowly heritable, making consistent, long-term goals essential to achieve genetic improvement, regardless of the availability of genomic data. Significant correlations were found between retained placenta and metritis, and between ketosis and displaced abomasum. The incorporation of genomic information using single-step methodology increased mean sire reliability by 9 to 15 percentage points. The largest improvement in sire reliability was found for sires with fewer than 10 daughters with health records. Based on this, it would be feasible to use genomic information on young bulls to achieve acceptable reliabilities in a shorter period of time.

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Brotzman, R. L., Döpfer, D., Foy, M. R., Hess, J. P., Nordlund, K. V., Bennett, T. B., & Cook, N. B. (2015). **Survey of facility and management characteristics of large, Upper Midwest dairy herds clustered by Dairy Herd Improvement records.** *Journal of Dairy Science*. Advance online publication. doi: 10.3168/jds.2014-9264

BACKGROUND: Measuring production performance after adopting new technologies or management practices can theoretically be accomplished by different metrics of milk production, reproductive efficiency, cow health, and longevity, typically using a vast number of routinely collected DHI test-day variables; however, management decisions may affect more than one area of performance, and no single DHI variable entirely encompasses the overall performance of a herd. Many DHI variables are strongly associated with herd size and milk production and not necessarily preferred outcomes of all production variables. There is a need to define a method for classifying herds' overall performance that is not biased toward the largest herds, the highest milk yield, or the best performance in any single variable.

PURPOSE: The purpose was to subject herds in each cluster group to a survey questionnaire to gain knowledge of herd management and facility characteristics that may have influenced the cluster analysis grouping. The hypothesis was that different management choices were associated with the grouping structure created by cluster analysis using DHI parameters, thereby identifying performance and management patterns on dairies that would be receptive to different outreach efforts.

RESULTS: This survey demonstrated that these categories of performance are associated with the presence or absence of management factors, providing opportunity for consultants and outreach educators to better tailor efforts toward a certain type of dairy rather than taking a blanket approach to applying recommendations to farms simply because of their larger herd size.

CONCLUSIONS: The authors concluded that a survey of management practices of dairy herds clustered by principal component analysis-selected DHI variables was useful for understanding the group outcomes of cluster analysis. Hypotheses generated by the resulting categorization of herds appear to be supported by patterns of management

associated with improved herd performance as revealed by the survey. Because dairy farm operators manage their herds with different levels of skill and available resources, it can be expected that technologies and practices will be implemented to variable degrees or competencies on each farm, resulting in variable effects on production and potentially few variables that could explain the overall performance of a dairy.

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Bradley, A. J., De Vliegher, S., Green, M. J., Larrosa, P., Payne, B., van de Leemput, E. S.,... Goby L. (2015). **An investigation of the dynamics of intramammary infections acquired during the dry period on European dairy farms.** *Journal of Dairy Science*, 98(9), 6029-6047. doi: 10.3168/jds.2014-8749

BACKGROUND: Only a small number of studies have investigated the dynamics of intramammary infection (IMI) during the dry period by sampling during the dry period and these have not attempted to proactively investigate the effects of cow and quarter risk factors. With increased scrutiny on the blanket use of antimicrobials, we need a better understanding of the risk factors associated with infection during the dry period so that we can improve or at least maintain levels of control in the face of reduced antibiotic use.

PURPOSE: The objective was to describe the prevalence and etiology of IMI, in the nonlactating period, in a large cohort of cows, across several farms across different jurisdictions in Europe while collating cow- and quarter-level information to facilitate an investigation of cow- and quarter-level factors influencing dry period outcomes.

RESULTS: Environmental mastitis pathogens predominated. Although gram-positive major pathogens were typically well controlled and did not increase in prevalence across the dry period, gram-negative pathogens generally increased in prevalence. There was an increase in the number of quarters that yielded no growth across the dry period, although this was driven by minor rather than major mastitis pathogen control. Other than the presence of a gram-positive or gram-negative pathogen 6 weeks after drying off, the measured parameters were not influential when considering their effect on the presence of pathogens postcalving. Analysis also suggested that the early and middle dry period may be more important with respect to the timing of acquisition of infection than previously thought. They observed substantial variation in the etiology and prevalence of different pathogens on different farms with, in all cases, at least one of the 12 herds experiencing the opposite of the others with respect to increases and decreases in pathogen prevalence.

CONCLUSIONS: The authors concluded that this study confirmed the importance of the dry period in mastitis epidemiology but highlighted the variation that is seen between different farms and therefore the importance of practitioners making the effort to understand infection dynamics on individual units, rather than just assuming and extrapolating from published studies. Although this study failed to associate individual cow and quarter factors with the risk of IMI, this should not be used to downplay their importance, as it may merely be highlighting the influential effect of farm-level factors.

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Calendar



A full calendar of all upcoming events and continuing education opportunities offered by the College of Veterinary Medicine is available on the website at <http://vet.osu.edu/>

Farm Science Review

Sept 22-24, 2015

Molly Caren Agricultural Center, London, Ohio

Please stop by and visit the College of Veterinary Medicine tent and the “Question the Authorities” program in the OSU Central Area.

Ohio Dairy Health and Management Certificate Program

Module 6 – Milk Quality & Udder Health

Dec 3-4, 2015

Hilton Garden Inn, Columbus, Ohio

Spots are always available for specific module plan.

Organic Livestock and Poultry Health Series

This series provides veterinary CE at no-cost.

Upcoming webinars:

Defining and Monitoring Health Events in Dairy Herds
September 7, 2015 (12-1 p.m.)

Certified Organic Livestock Standards
October 8, 2015 (1-2 p.m.)

Organic Livestock Inputs
October 22, 2015 (1-2 p.m.)

Nutritional Management of Lactating Dairy Cows
November 9, 2015 (12-1 p.m.)

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Greg Davis, Interim Director, Ohio State University Extension.

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