INTERPRETIVE SUMMARIES, JANUARY 2014

Do farm audits improve milk quality? *By Flore-Miyamoto et al., page 1.* In this study, we showed that a farm audit has a decreasing effect on the total bacterial count in bulk milk for at least 6 mo. We analyzed a data set consisting of 13,007 audits performed on 12,855 Dutch dairy farms from February 2006 to April 2008, merged with 325,150 laboratory test results of bulk milk samples from 6 mo before and after the audit. The results show that average total bacterial counts decreased (2 to 6%) from 1.5 mo after the audit to at least 6 mo after the audit.
http://dx.doi.org/10.3168/jds.2012-6228.

From goat colostrum to milk: Physical, chemical, and immune evolution from partum to 90 days postpartum. *By Sánchez-Macías et al., page 10.* Deciding when goat mammary secretion is colostrum, transitional milk, or milk is important for milk producers and goat keepers. Secretion composition, physical properties, and immunological parameters change throughout lactation; however, it is not clear when goat colostrum becomes milk. In this work, colostrum and milk characteristics were studied during the 90 days after birth, which will help to decide the best or most suitable use—kid rearing or pouring into the bulk milk tank for dairy processing.
http://dx.doi.org/10.3168/jds.2013-6811.

Prediction of fatty acid profiles in cow, ewe, and goat milk by mid-infrared spectrometry. *By Ferrand-Calmels et al., page 17.* The dairy industry needs tools to accurately predict the composition of milk. Mid-infrared spectrometry (MIR) appears to be a relevant, fast, and inexpensive method for assessing milk fatty acid profiles. This paper presents equations developed by French research teams to determine fatty acid profiles in cow, ewe, and goat milk using MIR spectra. This is the first report on such equations for ewe and goat milk. We conclude that MIR is a useful tool for large-scale fatty acid prediction in milk.
http://dx.doi.org/10.3168/jds.2013-6648.

Combined effect of active coating and modified atmosphere packaging in prolonging the shelf life of low-moisture Mozzarella cheese. *By Mastromatteo et al., page 36.* This study was conducted to evaluate the effect of active coating and modified atmosphere packaging on low-moisture Mozzarella cheese stored at 4, 8, and 14°C. The approach used was effectively able to prolong the shelf life of the product by inhibiting spoilage microorganisms and molds. Moreover, this strategy enhanced the safety of the product under thermal abuse conditions. The simplicity and relative economy of the edible coatings could be very beneficial and of commercial importance to the dairy industry.
http://dx.doi.org/10.3168/jds.2013-6999.

Microbiological safety and quality of Mozzarella cheese assessed by the microbiological survey method. *By Losito et al., page 46.* The paper describes the validation of the microbiological survey (MBS) method for the selective count of lactic acid bacteria and its use to assess the microbiological safety and quality of Mozzarella cheese. The MBS method can be used by small- to medium-sized cheese factories not having an internal microbiological laboratory to monitor the microbiological quality and safety of the production process and final products.
http://dx.doi.org/10.3168/jds.2013-7026.

Performance assessment of membrane distillation for skim milk and whey processing. *By Hausmann et al., page 56.* This study investigated a new separation process for the dairy industry, membrane distillation (MD), for concentrating skim milk or whey. Membrane distillation may replace reverse osmosis (RO) as a low-energy concentration operation; therefore, a study was undertaken to assess its potential compared with RO in terms of performance. Under certain operating conditions, MD can perform equally to RO and thus can concentrate skim milk or whey before drying to at least 20% solids without high pressure and without the high electricity demand of RO.
http://dx.doi.org/10.3168/jds.2013-7044.

Usage of sodium polyphosphates with different linear lengths in the production of spreadable processed cheese. *By Nagyová et al., page 111.* The paper contributes to the understanding of function of phosphate emulsifying salts in processed cheese production. We describe the effect of sodium salts of polyphosphate with different mean lengths in ternary mixtures with sodium monophosphate, diphosphate, or triphosphate on textural parameters of processed cheese spreads. These results could be applied when designing emulsifying salt composition for processed cheeses with appropriate properties. Processed cheese consistency was also affected by pH.
http://dx.doi.org/10.3168/jds.2013-7210.

Recovery of n-3 polyunsaturated fatty acids and conjugated linoleic acids in ripened cheese obtained from milk of cows fed different levels of extruded flaxseed. *By Cattani et al., page 123.* Two levels (500 or 1,000 g/d per head) of extruded flaxseed were supplemented to dairy cows to explore possible

effects on milk fatty acid content and recovery in ripened cheese (90 d). The addition of flaxseed to the diet did not influence average fat recovery (approximately 0.85), irrespective of flaxseed level, although some differences were found in the recovery of single fatty acids. Furthermore, supplementation of 500 g/d per head of extruded flaxseed was sufficient to improve the fatty acid profile of milk and ripened cheese through a notable increment in the proportion of n-3 fatty acids.
http://dx.doi.org/10.3168/jds.2013-7213.

Osteopontin is highly susceptible to cleavage in bovine milk and the proteolytic fragments bind the $\alpha_V\beta_3$-integrin receptor. *By Christensen and Sørensen, page 136.* Osteopontin (OPN) is an immunostimulatory protein present in milk in relatively high concentrations. Proteolytic cleavage of OPN controls its ability to interact with cells through integrin receptors. In this study, we characterized several fragments of OPN in bovine milk cleaved close to its integrin binding motif. Osteopontin was especially susceptible to cleavage at the Phe151–Arg152 peptide bond, and the cleaved protein could proficiently interact with cells via the $\alpha_V\beta_3$-integrin. Thus, OPN in bovine milk is able to interact with cellular integrin receptors in milk and in the gastrointestinal tract.
http://dx.doi.org/10.3168/jds.2013-7223.

Epilactose production by two cellobiose 2-epimerases in original milk. *By Krewinkel et al., page 155.* The mesophilic cellobiose 2-epimerases from *Flavobacterium johnsoniae* and *Pedobacter heparinus* were utilized in milk to produce the prebiotic sugar epilactose in situ. The enzymatic bioconversion was carried out at a low temperature (8°C) relevant to industrial processes typically used in the dairy industry. No substances other than the enzymes had to be added and, because of the reaction specificity of the cellobiose 2-epimerases, no side products were generated. The method described is a possible novel process to gain milk products with added value in the future.
http://dx.doi.org/10.3168/jds.2013-7389.

Short communication: **Effect of active food packaging materials on fluid milk quality and shelf life.** *By Wong and Goddard, page 166.* Lactase was covalently immobilized onto low-density polyethylene using polyethyleneimine and glutaraldehyde cross-linkers to form a bioactive packaging film. Because of the potential contaminants of proteases, lipases, and spoilage organisms in typical enzyme preparations, the goal of the current work was to determine the effect of immobilized-lactase active packaging technology on unanticipated side effects such as shortened shelf life and reduced product quality.
http://dx.doi.org/10.3168/jds.2013-7214.

Prevalence of and factors associated with hock, knee, and neck injuries on dairy cows in freestall housing in Canada. *By Zaffino Heyerhoff et al., page 173.* This study determined the prevalence of, and identified factors associated with, injuries of dairy cattle on freestall farms in Ontario and Alberta, Canada. Overall, 47% of cows were injured. Increasing parity was associated with knee and neck injuries. Lameness was associated with greater odds of hock injury, whereas a sand stall base was a protective factor for hock injury. The odds of knee injury were greater on farms where cows slipped or fell and were lower on farms with rubber flooring in front of the feed bunk compared with concrete. Low feed-rail heights increased the odds of neck injury.
http://dx.doi.org/10.3168/jds.2012-6367.

Effect of an Ovsynch56 protocol initiated at different intervals after insemination with or without a presynchronizing injection of gonadotropin-releasing hormone on fertility in lactating dairy cows. *By Bruno et al., page 185.* Resynchronization protocols are widely used to reduce the interval between artificial insemination in nonpregnant dairy cows. Percentages of cows pregnant to reinsemination were not altered by type of resynchronization protocol. Protocols using a presynchronizing gonadotropin-releasing hormone, however, decreased the percentage of cows inseminated on detected estrus and increased the percentage of cows inseminated at a fixed time. Cows inseminated on detected estrus had greater pregnancy per artifical insemination than cows inseminated at fixed time.
http://dx.doi.org/10.3168/jds.2013-6827.

Endometrial cytology, biopsy, and bacteriology for the diagnosis of subclinical endometritis in grazing dairy cows. *By Madoz et al., page 195.* The objectives of this study were to assess the agreement between endometrial cytology and uterine biopsy for the diagnosis of subclinical endometritis (SEND) in grazing dairy cows, and to describe the bacterial population isolated from the uterus of cows having subclinical endometritis. We observed little agreement between cytology and biopsy outputs such that biopsy would not be useful in the diagnosis of SEND. The likelihood of having a normal biopsy was greater for healthy cows than for those having SEND. Finally, no bacteria were isolated from cows with SEND.
http://dx.doi.org/10.3168/jds.2013-6836.

Factors influencing dairy calf and replacement heifer mortality in France. *By Raboisson et al., page 202.* Calf and heifer mortality represent high economic losses and is also a welfare issue. France is a suitable example for identifying the combination of factors as-