

HEIFER NOTES

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Provide heat stress relief to dry cows to prevent lactating cow health challenges and lower milk production, and offspring's health challenges and lower milk production.

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Dry cows need heat stress abatement, too

Health challenges impair future milk production, daughters' health and productivity

Without heat and humidity mitigation strategies, heat stress is often the scourge of lactating cow health and productivity. Research from the last decade also shows the negative influence of heat stress on dry cows – into their future lactations and daughters' future productivity and health.

At the 2019 Dairy Calf and Heifer Association Annual Conference, Geoffrey Dahl, University of Florida department of animal sciences professor, explained that heat stress impairs milk yield, partly due to heat's impact on dry matter intake. Cows also adjust their metabolism to increase heat loss under heat stress, which leads to further declines in milk production efficiency.

Furthermore, dry cows experience heat stress. This shows up as lower peak milk production two months later. "Cows experiencing heat stress in the dry period are programmed for lower yield," said Dahl.

Delays cell turnover

University of Florida researchers used a serial mammary biopsy approach, where samples were collected during the dry period and early lactation from heat-stressed and cooled dry cows. Researchers identified a dramatic reduction in mammary epithelial cell proliferation and a more rapid loss of cells early in the dry period with

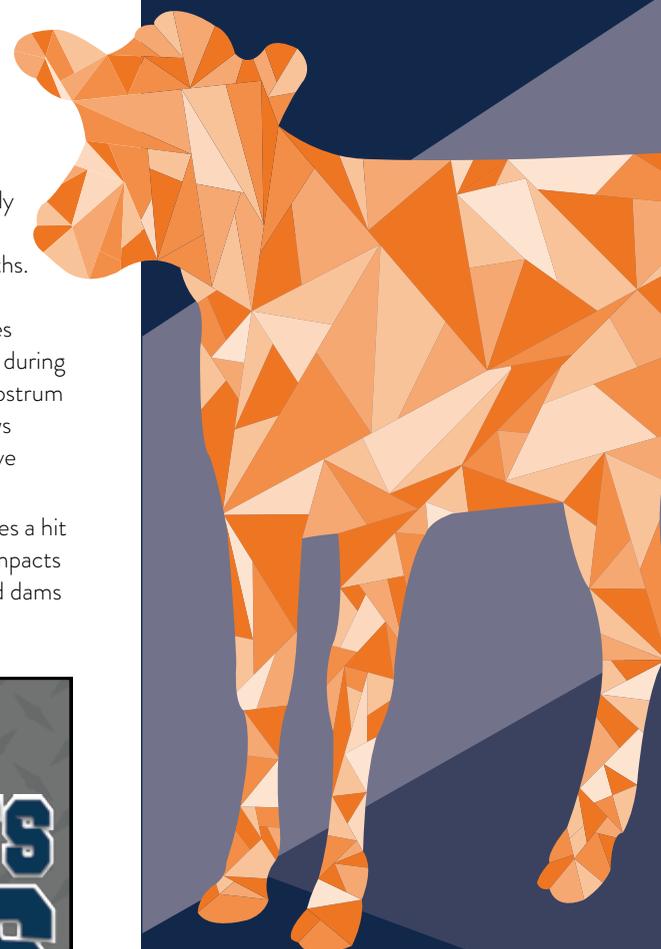
cooling, relative to heat stress. "No effect on cell loss was observed from the mid-dry period or in lactation," said Dahl. "Those observations indicate that cows under heat stress have a delay in mammary cell turnover early in the dry period and that reduces cell proliferation later as parturition approaches. Thus, the capacity for milk yield is reduced for the next lactation."

In addition to reduced future milk yield (about 1,100 pounds per lactation), cows that are dry during

hot weather have increased disease and are reproductively challenged when compared with cows dry in cooler months. Respiratory disease, mastitis and retained fetal membranes increase in cows that are dry during hotter months. Plus, the colostrum that heat-stressed fresh cows produce has reduced effective immunoglobulin.

The developing fetus also takes a hit from heat stress. Negative impacts on calves from heat-stressed dams

Continued on next page



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Continued from previous page

are born four to six days earlier than herdmates from cooled dams, and at a reduced body weight. "That birthweight reduction persists through weaning and is accompanied by shorter wither height, suggesting that in utero heat stress alters metabolism to increase peripheral accumulation of fat and reduced lean mass accretion," said Dahl.

Plus, these calves do not experience as effective immunoglobulin transfer from colostrum. "This yields a reduced immune status when compared with calves from cooled dams," said Dahl. "This is not due to differences in colostrum quality but rather is a shift in gut closure, which is accelerated in heat-stressed calves thereby limiting total time for immunoglobulin transfer."

Milk production down 10 pounds per day

Unfortunately, the impairment of heat stress doesn't end with early calf size and health. Dahl's

team has analyzed records from multiple studies across multiple years to examine the effect of in utero heat stress on growth, survival and productivity through the first lactation. With regard to growth, body weight deficits persist through 1 year of age after a calf experiences heat stress in utero. Survival in the herd, especially before puberty, is also reduced for in utero heat-stressed calves. "This means that fewer of them eventually enter the milking herd," said Dahl. If those calves enter the milking herd, they produce 10 pounds of milk per day less than their herdmates that were born to cooled dams.

"New research shows that the in utero heat-stressed calves never achieve parity with their cooled herdmates in the second or third lactation," said Dahl. "Plus, they pass that reduced production potential on to their offspring. Thus, in utero heat stress programs the developing heifer to be less productive for her life and she passes on that lower performance to her daughters."



The negative economic influence of late gestation heat stress is clear. "Providing heat stress abatement to dry cows should be profitable in almost every situation," said Dahl. Heat stress abatement supports cow health and productivity, and calf health and future productivity – and even their future offspring's health and productivity.

Farm native Matt Rush to deliver 2020 keynote address



"You can do more, be more and have more than you ever thought possible; you just have to be willing to get over yourself to get there."

– Matt Rush

Matt Rush – the man who takes good and makes it "gooder" – headlines the 2020 Dairy Calf Heifer Association (DCHA) Annual Conference, April 7-9, at the Alliant Energy Center, Madison, Wis. "You can do more, be more and have more than you ever thought possible; you just have to be willing to get over yourself to get there," says Rush. He will also lead a breakout session.

Raised on a farm in rural New Mexico, Rush brings a common sense, "farm boy" logic and humor to his speaking. He is known for bringing energy and enthusiasm to his speaking and training that motivates and inspires people. His message of encouragement puts smiles on people's faces.

Previously, he served as the New Mexico Farm Bureau chief executive officer and Ethos Leadership Group president. Also, Rush served on the American Farm Bureau's Foundation for Agriculture board of directors and Berean Children's Home board of directors.

A decorated public speaker and leadership book author, Rush will soon release a new book – "The Power of an Inch." Rush is passionate about his values, helping others and is dedicated to developing a strong, successful future for current and upcoming generations.

Visit www.calfandheifer.org and read future issues of Heifer Notes for additional information regarding the 2020 DCHA Annual Conference.

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Heifer Notes is published quarterly by the Dairy Calf and Heifer Association and distributed to all DCHA members and associated organizations through a partnership with Hoard's Dairyman.

Franken, Nieuwkoop-Yanez, Balbian, Ollivett join DCHA board of directors

The Dairy Calf and Heifer Association (DCHA) welcomes four new individuals to its board of directors – John Balbian, Jamie Franken, Kerry Nieuwkoop-Yanez and Theresa “Terri” Ollivett. In this issue of Heifer Notes, we introduce you to Jamie Franken and Kerry Nieuwkoop-Yanez.

Jamie Franken



Jamie Franken

Franken, a partner in City View Farms, Sutherland, Iowa, works with their customers to establish protocols and systems that help develop heifers that fit their customers’ needs. He is also responsible for purchasing and managing feed, reproduction and DairyComp records, along with dispatching trucks.

“Since I was a small boy at our dairy farm, my passion has always been cattle and it probably always will be cattle.” – Jamie Franken

Furthermore, Franken oversees all day-to-day cattle activities, works with their neighbors to create value for City View Farms’ manure, collaborates with the nutritionist to find the best feed and ration values, and maintains farm growth that the family business owners desire.

City View Farms is a family business that started in 1914. It has evolved from a dairy in Sioux Center, Iowa, to raising heifers in Sioux Center and Sutherland. The Sioux Center site houses 2,000 heifers and the Sutherland site will house just over 20,000 heifers after new construction is completed this summer.

“Since I was a small boy at our dairy farm, my passion has always been cattle and it probably always will be cattle,” said Franken.

The Franken family has deep DCHA roots. His parents went to the first DCHA Annual Conference (at that time it was called Professional Dairy Heifer Growers Association) in Atlanta. “We have always found value in attending DCHA conferences and being involved in DCHA,” said Franken. “One of the most beneficial things has been meeting and developing relationships with fellow producers and industry people from all over the country. I feel the technical information we learn at the conference has been very beneficial and the networking opportunities are priceless.”

Kerry Nieuwkoop-Yanez



Kerry Nieuwkoop-Yanez

Nieuwkoop-Yanez works for Merck Animal Health as a territory manager. Her responsibilities include working Central California to understand and

identify customers’ needs and communicate Merck’s products in a way that’s meaningful and relevant to each individual customer.

“I hope we can bring more West Coast influence and calf raisers to be a part of DCHA.”

– Kerry Nieuwkoop-Yanez

With much of her extended family in the dairy and/or calf-raising business, Nieuwkoop-Yanez chose a career in the animal health side of the dairy industry. She studied dairy science at California State University, Fresno, and graduated in 2008.

Nieuwkoop-Yanez joined the DCHA board of directors as the allied industry representative. “I hope we can bring more West Coast influence and calf raisers to be a part of DCHA,” she said. Her goal as a DCHA board member is to help foster relationships across the United States to create a strong network with industry professionals and producers.

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PROTERNATIVE MILK – THE NEW MEASURE OF PREVENTION

Fulfilling your commitment to provide the best care for your calves sometimes means following a different road. Recent advancements in pre-weaned calf nutrition have opened new routes to help address stress, limit treatment and positively benefit the health of an animal. Adopting a new measure of prevention through milk or milk replacer is an important first step to help minimize delays on the road ahead.

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Michael Steele

There's good news for the dairy industry. Preweaning mortality and morbidity rates for calves have decreased to 5 percent and

33.8 percent, respectively, according to a United States Department of Agriculture study (2014-2015). Yet, Michael Steele from the University of Guelph, Guelph, Ont., Canada, who spoke at this year's Dairy Calf and Heifer Association Annual Conference, said, "Although it is reassuring to see these numbers decrease, there is always room for improvement."

Because the majority of calf health problems are related to digestive issues, Steele said mortality and morbidity could be mitigated through a sound nutritional and management program. How can this be accomplished? "Recent research showcases that pasteurization of colostrum, extending colostrum feeding and introducing transition milk during the first day of



Figure 1. The top horizontal graphic shows "traditional" colostrum and milk feeding, whereas the bottom horizontal graphic shows today's recommended colostrum, transition colostrum/milk and milk feeding.

life prior to transitioning to milk or milk replacer can have a positive impact on the health and gastrointestinal function of calves," said Steele. To visualize feeding transition milk, see Figure 1.

More than immunoglobulins

Colostrum's (and transition milk) benefits don't stop with immunoglobulins. Additionally, this early milk contains growth factors, hormones, cytokines, enzymes, polyamines and nucleotides, antimicrobial components, and white blood cells that all contribute to the calf's ability to fight infection

and promote the growth and development of the newborn calf.

Furthermore, the University of Guelph assistant professor encourages calf raisers to reconsider traditional limit feeding of milk or milk replacer – typically just 10 percent of the calf's birth body weight. Instead, consider adopting a system, such as automated feeders, that allows calves to consume 20 percent of birth body weight. "Calves raised on a 'full potential' feeding program reap many benefits, including greater total weight

gain during the pre-weaning period, fewer signs of hunger and increased (future) milk production," said Steele.

The "greater plane of calf nutrition" doesn't end with feeding additional milk/milk replacer. It also includes weaning. "The dairy calf undergoes intensive biological adaptations of the gastrointestinal tract during weaning transition," said Steele. "These adaptations are even more abrupt when elevated levels of milk are fed. A smooth transition from liquid feed to solid feed by weaning later in life and applying a proper stepdown feeding protocol is highly recommended. This strategy allows calves to consume and digest sufficient solid feed for their growth and minimize distress at weaning."

Additional research is needed to evaluate the interaction between age of weaning and stepdown protocols – especially around the postweaning and post-transition nutrition programs. Research results will help calf experts develop sound feeding protocols that help optimize growth during weaning.

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