

Effects of Season of Birth on Dairy Cow Longevity in Florida¹

Izabella M. Toledo, José Eduardo Portela Santos, and Geoffrey E. Dahl²

Dairy cow longevity, defined as the length of the animal's life, is an important economic trait for producers. Longevity of dairy cows is the result of survival in the first weeks of lactation and culling decisions, which are determined by several risk factors such as diseases, as well as reproductive and productive performance. High production, health, and good reproductive performance influence the farmer's decision regarding the optimum time to cull a cow and determine the average productive life of dairy cows. In the United States, dairy cows start their first lactation at 25 months of age and live a mean of 64.3 months of age, with a productive lifespan of approximately 2.9 lactations (USDA 2016).

Dairy cow longevity is also associated with the environmental footprint of the dairy industry. The ability of dairy farmers to keep their cows longer, if the cows are healthier, may positively enhance the economic performance of the farms, reduce the environmental footprint of the milk industry, and help justify the sustainable use of animals for food production.

The associations between environmental factors such as heat stress and production performance have been extensively studied in lactating and dry dairy cows. Seasonal changes associated with exposure to high environmental temperatures negatively affect health, behavior, and performance of dairy cows throughout their life cycle. In Florida, cows on dairy farms are exposed to heat stress for about 267 days per year, whereas in the whole United States, cows in facilities without use of evaporative cooling systems experience on average 96 days of heat stress during the year. The negative effects of heat stress exposure are observed throughout the entire lactation cycle. Dry cows exposed to heat stress during late gestation produce less milk and have compromised health and reproductive performance on the subsequent lactation. In addition, exposure to heat stress during late gestation also affects the lifespan of the calf, leading to a shorter productive life.

Making management adjustments to use heat abatement strategies such as shade, fans, and soakers to decrease exposure and alleviate the negative effects of heat stress

during the hot months of the year give farmers the opportunity to decrease culling risk factors and possibly increase cow productive life. Another management adjustment that may result in increases in dairy cow productive life and positively impact the dairy industry is associated with season of birth. On average, it takes around 2 lactations for the producer to have a net positive economic return from a replacement heifer. When cows have extended longevity, rearing costs, which are usually ranked as the second or third greatest cost associated with dairy production after feed and labor, are lower due to a decrease in the number of replacement heifers.

It has been documented that lactating dairy cows start to experience the effects of heat stress when the temperature-humidity index (THI) exceeds 68 (Zimbelman et al. 2009). However, Dikmen et al. (2009) have recorded that in Florida, cows that have become physiologically adapted to heat stress do not show increases in rectal temperature until they experience a THI of 79.6. Florida data (Toledo et al. 2024) show that temperature-humidity index measurements are greater during the hot season (June, July, August, and September) compared with the cool season (December, January, February, and March) (77.0 ± 0.2 vs. 58.4 ± 0.5). Observation of greater THI values during the hot season shows that even under cooling systems, lactating cows are exposed to heat stress and are subject to production losses during the hot season.

Records of dairy cows born in Florida during either the cool or hot seasons show that more cows born during the coolest months of the year remain in the herd for 5 or more lactations compared with cows born during the hottest months of the year (Toledo et al. 2024).

In Florida, over all lactations (i.e., lactations 1–8), a greater fraction of cows born during hot months are sold compared to cows born during the cool months. Increased cow death during the first 4 lactations is also greatly associated with cows born during the hot months compared to cool months, independently of the fresh season.

Culling is the process of removing animals from the herd either because they are sold to other producers or sent to slaughter. Culling decisions are influenced by economic interest. It may be due to low milk production, low milk prices, adverse behavior, injury, reproductive issues, diseases, foot and leg issues, or death. The risk of culling is not constant over the lifetime of a dairy cow. It changes according to the lactation number, stage of lactation, reproductive status, and milk production.

Productive cows that are healthy and have no reproductive, leg, or foot issues are favored to stay in the herd longer. Florida data (Toledo et al. 2024) show that cows are usually sold due to breeding, foot and leg, digestive, and respiratory issues, and mastitis. Greater numbers of cows born during the hot months are sold due to breeding issues, mastitis, and foot and leg issues compared with cows born during cool months.

In summary, in Florida, the birth of dairy cows during the coolest months of the year is associated with increases in the number of cows that stay in the herd for more than 5 lactations. Birth season also affects the numbers of cows sold and dead. More cows born in Florida during the hottest months were sold due to breeding, foot and leg, and mastitis issues. Producers may benefit from this data by making birth season management adjustments to possibly increase cow longevity in dairy herds.

References

- Dikmen, S., and P. J. Hansen. 2009. "Is the temperature-humidity index the best indicator of heat stress in lactating dairy cows in a subtropical environment?" *Journal of Dairy Science* 92(1): 109–116. <https://doi.org/10.3168/jds.2008-1370>
- Toledo, I. M., L. Cattaneo, J. E. P. Santos, and G. E. Dahl. 2024. "Birth season affects cow longevity." *JDS Communications* 5(6): 674–678. <https://doi.org/10.3168/jdsc.2024-0590>
- USDA. 2016. *Dairy 2014: Dairy Cattle Management Practices in the United States, 2014*. https://www.aphis.usda.gov/sites/default/files/dairy14_dr_parti_1.pdf
- Zimbelman, R. B., R. P. Rhoads, R. J. Collier, and G. C. Duff. 2009. "A Reevaluation of the Impact of Temperature Humidity Index (THI) and Black Globe Humidity Index (BGHI) on Milk Production in High Producing Dairy Cows." In *Proceedings of the Southwest Nutrition Management Conference*. 158–169. Tucson, AZ: University of Arizona.

¹ This document is AN405, a publication of the Department of Animal Sciences, UF/IFAS Extension. Original publication date February 2026. Visit the EDIS website at <https://edis.ifas.ufl.edu> for the currently supported version of this publication. © 2026 UF/IFAS. This publication is licensed under [CC BY-NC-ND 4.0](#).

² Izabella M. Toledo, Extension assistant scientist, Ph.D., dairy, UF/IFAS Department of Animal Sciences, Gainesville, FL; José P. Santos, professor, UF/IFAS Department of Animal Sciences, Gainesville, FL; Geoffrey E. Dahl, professor, UF/IFAS Department of Animal Sciences, Gainesville, FL; UF/IFAS Extension, Gainesville, FL 32611.

The Institute of Food and Agricultural Sciences (IFAS) is an Equal Opportunity Institution authorized to provide research, educational information and other services only to individuals and institutions that function with non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, marital status, national origin, political opinions or affiliations. For more information on obtaining other UF/IFAS Extension publications, contact your county's UF/IFAS Extension office. U.S. Department of Agriculture, UF/IFAS Extension Service, University of Florida, IFAS, Florida A & M University Cooperative Extension Program, and Boards of County Commissioners Cooperating. Andra Johnson, dean for UF/IFAS Extension.