

Work needed to reduce the negative effects of heat stress on Australian dairy cows, research reveals

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The results show that high temperature-humidity conditions lead to a significant drop in milk production as most cows stopped grazing, sought shade, panted and spent more time at watering points. Credit: University of Melbourne

Researchers have investigated the impact of heat stress in Australian dairy cows grazing summer pastures, revealing high temperature and humidity leads to a significant drop in milk production, but that this can be rectified through the provision of shade and more water troughs.

Led by the universities of Melbourne and Ghana, researchers at the Faculty of Veterinary and Agricultural Sciences investigated the effect of summer heat of lactating Holstein Friesian cows at the University's Robotic milking farm in Dookie, Victoria, Australia.

A number of different non-invasive tests were undertaken to monitor the cows during the summer period of December 2018—February 2019, measuring the effect of high temperature and humidity on physiological variables such as respiratory rate, panting scores and body temperature.

The results show that high temperature-humidity conditions lead to a significant drop in milk production as most cows stopped grazing, sought shade, panted and spent more time at watering points.

Heat stress not only includes heat from the environment but also the metabolic heat—produced by the cow itself to support body functions. High producing lactating [dairy cattle](#) tend to be more sensitive to heat stress because of their increased metabolic heat production, which is a result of their higher feeding requirements to support high milk yield.

Researchers say the rise temperatures due to global warming is putting increased pressure on Australia's livestock industry as animals are increasingly exposed to warmer more hot and humid weather. This also represents an animal welfare issue that researchers are keen to improve.

University of Melbourne lead researcher Dr. Surinder Chauhan said that while the research indicates that over summer months cows can experience severe heat stress, there are actions that farmers can take to

improve livestock welfare such as the provision of shade and water for the cows to cool down.

"Our previous research has shown that continuous genetic selection of dairy cows for improved feed intake and higher milk yield may also affect the heat tolerance of cows with negative association between thermotolerance (the ability to tolerate [heat](#)) and production traits," Dr. Chauhan said.

University of Melbourne Head of the School of Agriculture and Food, Professor Brian Leury said that the research represented an important collaboration between the University of Melbourne and partners in Africa.

"We are very thankful for the expertise brought by co-author Richard Osei-Amponsah and hope to continue studies across Africa and Australia to investigate which breeds of cow are better adapted to [warmer climates](#)."

The Bureau of Meteorology declared that 2019 was Australia's hottest year on record.

The research is published in *Animals*.

More information: Richard Osei-Amponsah et al. Heat Stress Impacts on Lactating Cows Grazing Australian Summer Pastures on an Automatic Robotic Dairy, *Animals* (2020). [DOI: 10.3390/ani10050869](https://doi.org/10.3390/ani10050869)

Provided by University of Melbourne

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