

Cooling cows efficiently with water spray

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Dairies use intermittent sprinkler systems to cool cows in warm weather, but little experimental work has been done to determine how much water is needed to achieve beneficial effects. A group of dairy scientists conducted a study at the University of California, Davis, to examine the effects of using low-flow sprinkler systems that cut water use for this purpose by nearly 75%. Their research is published in the current issue (June 2016) of the *Journal of Dairy Science*.

"Dairies vary widely in the amount of water used to cool [cows](#)," explained lead investigator Jennifer M. Chen, of the Department of Animal Science, University of California, Davis, but using more water results in diminishing returns and minimizing water use is a sustainability concern for US dairy production.

Chen and colleagues compared the effects of high and low water use on cattle behavioral, physiological, and production responses, and evaluated heat abatement in relation to water use. The authors determined that the low-flow sprinkler systems were just as effective as the high-flow systems in mitigating the effects of heat in California's hot, dry climate, despite using only about one-quarter as much water.

- Cows had lower body temperatures when given access to sprinklers, but the low-flow and high-flow systems delivered similar benefits.
- Cows exhibited similar behavior when given access to both types of sprinklers. They showed similar patterns in time spent near the sprinkler-cooled feeding area, near the uncooled water trough

area, and lying down, and experienced similar changes in feed consumption with temperature.

- Cows produced more milk when given access to sprinklers, but both types provided similar benefits.

"Future work should evaluate the degree of heat abatement that can be achieved with even less water. An alternative to reducing sprinkler flow rate may be to apply higher flow rates for a shorter duration," added Chen. Reducing water usage by using higher flow rates for a shorter duration could also reduce spray drift, which reduces sprinkler cooling efficiency and is a concern at larger scales than the current study.

"Water use on dairies increases in the summer because cows drink more water and dairy farmers use water sprinklers to keep cows cool. This new research demonstrated that a "low-flow" sprinkler system that uses nearly 75% less [water](#) cooled cows just as well as a traditional high-volume system. Low-flow sprinklers conserve valuable natural resources without sacrificing cow comfort on-farm," said Matt Lucy, PhD, editor-in-chief, *Journal of Dairy Science*, and professor of animal science, University of Missouri, USA.

More information: Jennifer M. Chen et al, Cooling cows efficiently with water spray: Behavioral, physiological, and production responses to sprinklers at the feed bunk, *Journal of Dairy Science* (2016). [DOI: 10.3168/jds.2015-10714](https://doi.org/10.3168/jds.2015-10714)

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