

Characteristic of the temperature and humidity index modified by wind and radiation in Entre Ríos, Argentina

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Summary

The Entre Ríos province has a humid temperate climate with a hot summer. These features cause heat stress on dairy cows, mainly in the summer months, affecting both their physiology and productivity. The Temperature Humidity Index (THI), used to indicate the degree of stress, does not take into account the effect of solar radiation or wind speed. In this paper, the conventional THI was contrasted with an index modified by solar radiation and wind speed (ITH) in order to obtain specific information in four representative locations in two dairy regions. The hourly value has been obtained, day and night conditions were differentiated, and descriptive statistics were obtained. In 70% or more of the cases, the ITH exceeded the threshold of 72 in the four localities indicating that the probability of occurrence of stress conditions during a day is high. As expected, during the day, the ITH exceeds the threshold in greater proportion than during the night. Also, during the day, in situations of discomfort, the ITH tends to underestimate its value with respect to the ITH while, below the threshold, the situation is reversed. The results show the importance of considering the effect of radiation and wind on the construction of the ITH, improving the sensitivity with respect to ITH, based on data available at time scale. In addition, they reaffirm their usefulness in order to promote management practices aimed at mitigating heat stress in the rodeo.

Key words: animal welfare; dairy cattle; stress index