



Event	Montreal (CA), ICAR 2022 Annual Conference	Title of the presentation
Subject	Abstract presented manuscript as ORAL presentation	In-farm and environmental THI measurement for mitigation of Heat Stress in dairy cattle in Italy

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Session: Using sensor technologies for health and welfare monitoring and recording as part of dairy herd improvement

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ABSTRACT

The increasing temperature in northern latitudes is becoming one of the most pressing challenges facing today's dairy industry.

The negative consequences of heat stress result from animals' inability to dissipate sufficient heat to maintain homeothermy. High ambient temperature and relative humidity cause the increase in body temperature, which in turn affect animal production and well-being and trigger compensatory and adaptive mechanisms to re-establish homeothermy. The temperature-humidity index (THI) has proven to be a valuable tool to gauge livestock productivity response as a function of climate.

The LEO project (Livestock Environment Opendata; URL: www.leo-italy.eu), a six-year project to enhance knowledge and help overcome future challenges of livestock, will provide a series of key information to prevent heat stress in dairy farms.

The first information is a THI climate alert based on the 48h forecasting weather model COSMO-IT with a spatial resolution 0.025 x 0.025 (2.5 square Km).

The second information is the effective daily THI based on more than 100 climatic stations throughout Italy.

The third information is the real-time hourly in-farm temperature and humidity measurement with a narrow-band data logger uploading data on a clouds database. Data are converted in THI and then they are returned to the farmers as a monitoring dashboard or push notification alert on a proprietary free app. Up to now, the LEO project has already equipped with the datalogger about 1000 Holstein, Italian Brown, and Simmenthal dairy farms.



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The last information is a Summer/Winter report, comparing graphically the summer and winters averages of 12 key parameters and providing an indicator of the farm management's ability to mitigate heat stress.

The first two pieces of information will help the farmer react to potential stressors early and keep critical periods under strict surveillance. The last two information will provide tools for short and medium-term monitoring of the effectiveness of the measures adopted in terms of climatization and other herds management actions to cope with the increasing temperature. :



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