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Journal of Dairy, Veterinary & Animal Research

Editorial

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Pros and cons of infrared thermography for veterinary science and industry

Editorial

This editorial seeks to appraise the most critical pros and cons of Infrared thermography (IRT) as a promising technology for veterinary science and industry. This technology has the capability to detect thermal radiations from any surface of any object.[1] What makes IRT special is its noninvasive and noncontact nature. Changes in skin temperature, indicating metabolic changes in underlying tissues, may be monitored by this technology.[2,3] The temperature would depend on blood flow and tissue metabolism rate.[4] Thus, the IRT could potentially examine and quantify physiology and health through monitoring overlying skin temperature changes.[5] As such, the IRT may help diagnose and more importantly to prognose inflammation related to metabolic disorders such as laminitis and mastitis.[6–11]

In a nutshell, the IRT may aid in early diagnosis of the many health issues on farm before the occurrence of distressing economical consequences. This would mean a prognostic capability for IRT in modern veterinary science and industry. Such a capability would allow interventions to prevent and attenuate unhealthy conditions. Nevertheless, any solid and reliable use will yet need to be realized on a global scale. This requires more extensive and longitudinal studies to enable decision-making on the stage and severity of forthcoming health challenges.

In working with infrared cameras, it is crucial to remove any outlier maximum temperatures of extraneous and unrepresentative particles. In addition, depending on the surface of interest, a control skin area ought to be traced for within-area and within-animal corrections. The maximum relative temperature of the control area must be deducted from that of the target surface to minimize variability and allow inter-animal comparisons.[4]

The IRT is a noninvasive technology and on-farm tool that imposes minimal stress to the animal. This is of interest from an animal welfare perspective.[12] Effective education for on-farm application of IRT will provide means to weigh advantages against disadvantages for future investments. The high cost could be a limiting factor that must be dealt with through interdisciplinary research and education. Moreover, the ability of IRT in forecasting clinical problems long before symptoms occur remains unestablished. Artifacts are of concern as well. The unreal values result from the several interfering factors affecting thermal radiations detected. The thermal radiation coming from the surface of interest (and not from the environment) must be specified and quantified. Furthermore, although IRT monitors skin temperature changes, it provides inadequate information on possible causes. This implies the necessity of applying parallel management tools and strategies for optimally accurate measurements, successful prevention, and effective treatments.

To conclude, pros and cons of IRT must be well studied, quantified, and weighed before the technology can be feasibly and economically recommended on-farm. It is mainly a prognostic capability for IRT that could justify large investments and attract global merit for future applications in animal industries.

Volume 1 Issue 3 - 2014

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Received: December 03, 2014 | **Published:** December 04, 2014

Acknowledgments

Thanks to the Iran's Ministry of Science Research & Technology, National Elite Foundation, and University of Zanjan for supporting the author's global programs of optimizing the third millennium science education.

Conflict of interest

Author declares that there is no conflict of interest.

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Citation: Nikkhah A. Pros and cons of infrared thermography for veterinary science and industry. *J Dairy Vet Anim Res.* 2014;1(3):63–64.
DOI: 10.15406/jdvar.2014.01.00013