Event Montreal (CA), ICAR 2022 Annual Conference
Subject Abstract presented manuscript as POSTER presentation

Title of the presentation

Evolution of ID Tags from Prominent Value to Radical Novel

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Session: Poster Session

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ABSTRACT

Evolution From Prominent Value to Radical Novelty

Clearly there is prominent value in the industry today from bovine Identification Tag innovation. But Tags sold today are simple radios and accelerometers harvesting simple motion. Current advances in silicon photonics have enabled development to radically improved Tags. This allows commercial viability of non-invasive rapid multi-modal Biomarker monitoring to measure core body temperature, heart rate, respiration rates, blood oxygen levels, blood pressure, lactate and glucose indicators in real time.

Quite simply current tags have been useful in identification and basic animal behaviors that indicate readiness for breeding. Today there are noninvasive health monitoring systems for dairy cows, as described in US Patent No. 10,667,496, titled BOVINE RUMINATION AND ESTRUS PREDICTION SYSTEM AND METHOD, that use a combination of externally worn sensors and area sensors to monitor particular parameters that gauge bovine posture data, motion data, and rumination data to determine fertility cycle. This data is eventually transmitted wirelessly from the various sensors to a microprocessor or a wireless network for analysis.

Sales of smart tags over the last few years have created an ROI for farmers. But there are limited benefits. Bovine fertility lingers at 60% effectiveness. Critical fertility variables such as core temperature are not monitored remotely. General Health and wellness monitoring is absent from today's tags.

The time for Optic based Multi-Modal Biomarker monitoring is now. Best in class precision device designs create a new class of data with radical improvement for dairy cow and beef cattle monitoring. Photonic-based modules with optimized electronic silicon and Bio-sensing Algorithms offer key insights into bovine health and stewardship.

Radical tags expand the scope of continuous monitoring and quicker identification for the following: All of which save farmers money.

- Core body temperature

- Breeding, fever, disease or complications and eliminate rectal readings.

• Heart Rate and Respiration Rate

- Adrenaline based Heat Stress and other sick cow symptoms.

- Calves are especially vulnerable in cold weather.

• Respiration Rate, Heart Rate and Pulse Oximetry Biomarkers need to be monitored.

- The need for noninvasive breath or respiration rate monitoring decreases time consuming labor costs associated with manually obtaining these.

- Avoid invasive blood samples

• Hydration data can reduce risk for hyperthermia, dehydration and metabolic collapse.

• The bovine biomarker monitoring system would create an individual "signature" of bovine vital and always compare it to itself.

The agriculture community has always embraced innovation and the door is open to embrace Optical Biometric Tags.

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