

Topic

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Early detection of diseases - combination of sensors and software integrating information to assess fertility, health and location of animals

Technical efficiency

Animal welfare, Environment



Background

Health disorders not only negatively affect the wellbeing of dairy cows but are also associated with significant economic losses to the farm. With a cow monitoring system such as use of sensors and other technologies, farmers can be alerted as soon as there are changes in rumination, activity, behavioural or eating patterns.

How does the strategy work?

Sensors that measure physiological, behavioural and production indicators in dairy cows (milk yield, temperature, activity, etc.) can assist farmers to **improve animal health and welfare** and **identify sick cows earlier**.

Different **sensors** available on the market, such as sensor systems for mastitis detection (e.g. electrical conductivity), oestrus detection for dairy cows and for youngstock (e.g. pedometers,...), and other dairy cattle related sensor systems (e.g. weighing platform, rumination time sensor, temperature sensor, milk temperature sensor, etc.).

These technologies and their adoption benefit farmers by frequently **monitoring** dairy cattle without disturbing the natural behavioural expression. Implementation of these tools via e.g. computer-controlled programs can become valuable instruments for gaining insights in the health status and the fertility level of the herd, increasing longevity and reducing veterinary costs. It results in less labour needed for direct treatment of animals, but more labour for checking sensor data and attention data.

Positive features

- Sensors help farmers to **discover potential health problems early**
- Early intervention also maximizes the **efficacy of treatment** thus causing minimal damage to milk production, cow fertility, and wellbeing of animal
- Prompt treatment allow cows to return to their usual good health and **maximum productivity** as early as possible.

Be careful, especially on these points

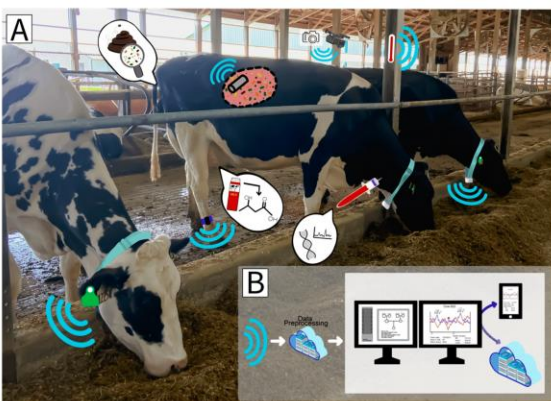
- Use of sensor data require careful **data quality validation**
- **Data accessibility:** sensor data must be available off-farm
- Sensor **data** are often very **complex and diverse**; therefore, a data consolidation and integration layer is required
- Use of this sensor technology can only be successful if the farmer is **data minded**

Equipment involved? Investment?

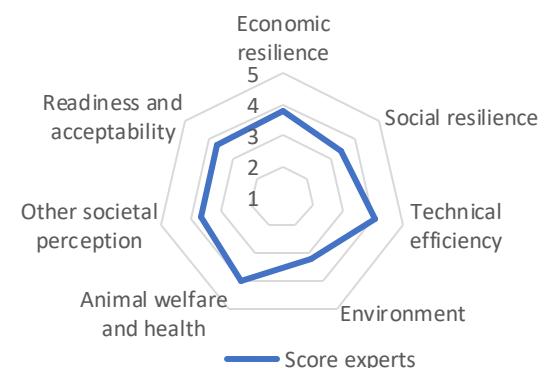
- The precision technologies are deployed using a variety of **sensors** integrated with software such as triaxial accelerometers, gyroscopes, geo-positioning and triangulation networks, infrared thermography, thermometers, and microphones
- These sensors are **often wearable** and can be attached to the cow to track their behaviour or physiological status
- **Investment** in sensor technology include sensors, software and access to data.

Specific advises

- Sensor systems must provide clear information
- Information must be associated with management (actions) – cow-specific decision support system
- Look further than costs, benefits are sometimes indirect



Assessment of method



Quote of a farmer:

“Early detection of diseases and changes in behaviour of dairy cows help me to improve productivity, efficiency, and provide me with more peace of mind”

