Expectations, needs, and welfare requirements from sensors at the dairy farm

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Good welfare

Happy cow
- Health
- Nutrition
- Environment
- Behavior

Emotion
Emotion assessment

Arousal

High

Fearfulness

(Aimed gun)

Joy

(Rollercoaster)

Valence

Positive

Sadness

(Cemetery)

Relaxation

(Cow)

Low

Boissy et al. 2007
- **PLF**
  precision
  livestock
  Farming

- **KPIs**
  Key
  Performance
  Indicators

*Group care is a method of care for the individual.*
• What kind of sensors do we have? 129 different technology

• How does the current sensor answer the 5 domains?

Stygar et al. 2021
Hogeveen et al. 2021
Leg tag

• Health
• Health status

• Rumination

• Heat detection
• Activity
Collar tag

- Health
  - Health status
  - Disease detection
  - Pregnancy validation
  - Calving indication

- Rumination
- Nutrition
- Feeding time

- Heat detection
- Activity
- GPS position/tracking
Ear / microphone

- Health status
- Body temperature
- Rumination
- Nutrition
- Feeding time
- Heat detection
- Activity
- position
Ear / microphone

• Health status
• Body temperature

• Rumination
• Nutrition
• Acidosis
• PH
• Activity
• Feed monitoring

• ID
Milk sensors

- Health monitoring
- Composition
- SCC
- SARA
- Ketosis
- Progesterone
- LDH
- BHB

- production
Camera

- Udder health
- Inflammation
- fever

- BCS
- Feed event
Load cell

Health - lameness

- Rumination
- Feeding time
- Feeding monitor/analysis
- Water intake

- Body weight in motion
Environmental sensor

- Environment temperature
- Location on the farm
Holly grail of sensors
Certification bodies
Thank you question?