
TECH & DECISION MAKING

DRIVING HERD PRODUCTIVITY

March 2023
Coles Milk Department
Supplier Conference

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Lallemand Australia

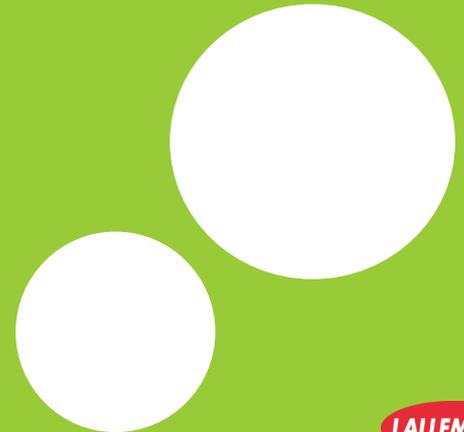
The Lallemand logo consists of the word "LALLEMAND" in white, uppercase, sans-serif font, centered within a red, horizontally-oriented oval shape.

LALLEMAND

LALLEMAND ANIMAL NUTRITION

AGENDA

- 01 CONSUMER TRENDS**
The trends affecting agriculture
- 02 TECHNOLOGY ON FARM**
Whats making the biggest impact
- 03 WEARABLE OR INVISIBLE**
Technology in herd productivity
- 04 DECISION MAKING**
To drive herd profitability



MEGA TRENDS AFFECTING AGRI-FOODS NOW

Consumer trends making the biggest impact on agri-food



**PRODUCT PRICES /
THE ECONOMY**



**FOOD
SECURITY**



**DIETARY
TRENDS**



**ANIMAL
WELFARE**

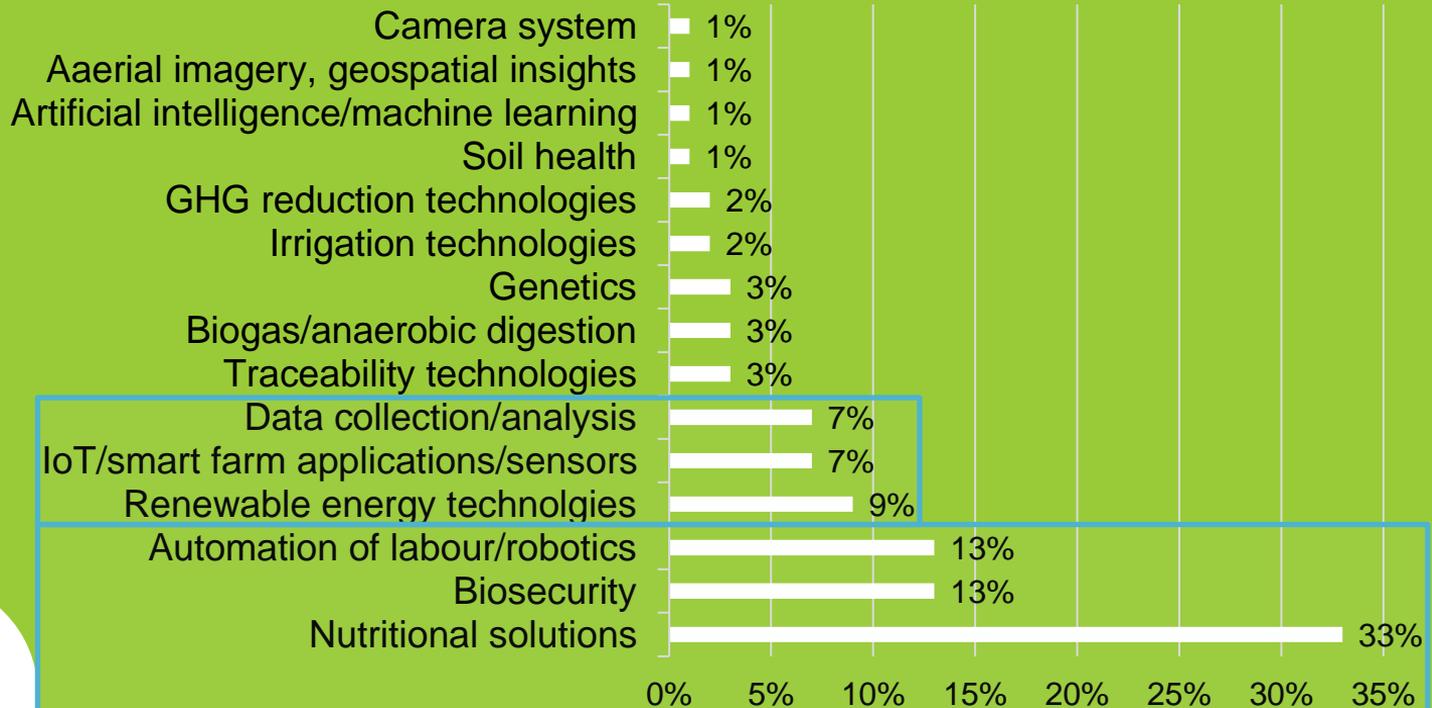
BIG DATA – ANTIBIOTIC RESISTANCE – SUPPLY CHAIN – CLIMATE

TECH ON FARM

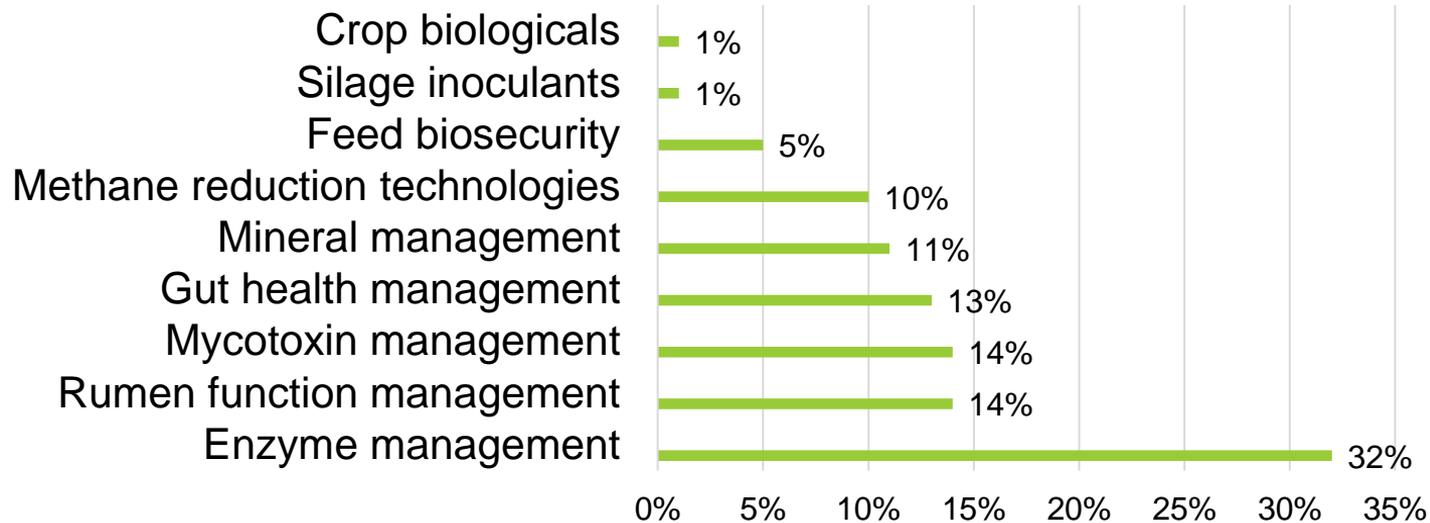
- Automatic Gate Timers
- Milk Meters
- Robotic Milkers
- Weigh systems
- Mastitis testers
- Pregnancy testers
- Cow identification
- Cow Monitoring, incl GPS
- Fertiliser technology
- Water treatment
- Drafting systems
- Herd Management software



TECHNOLOGIES MAKING THE BIGGEST IMPACT?



NUTRITIONAL STRATEGIES

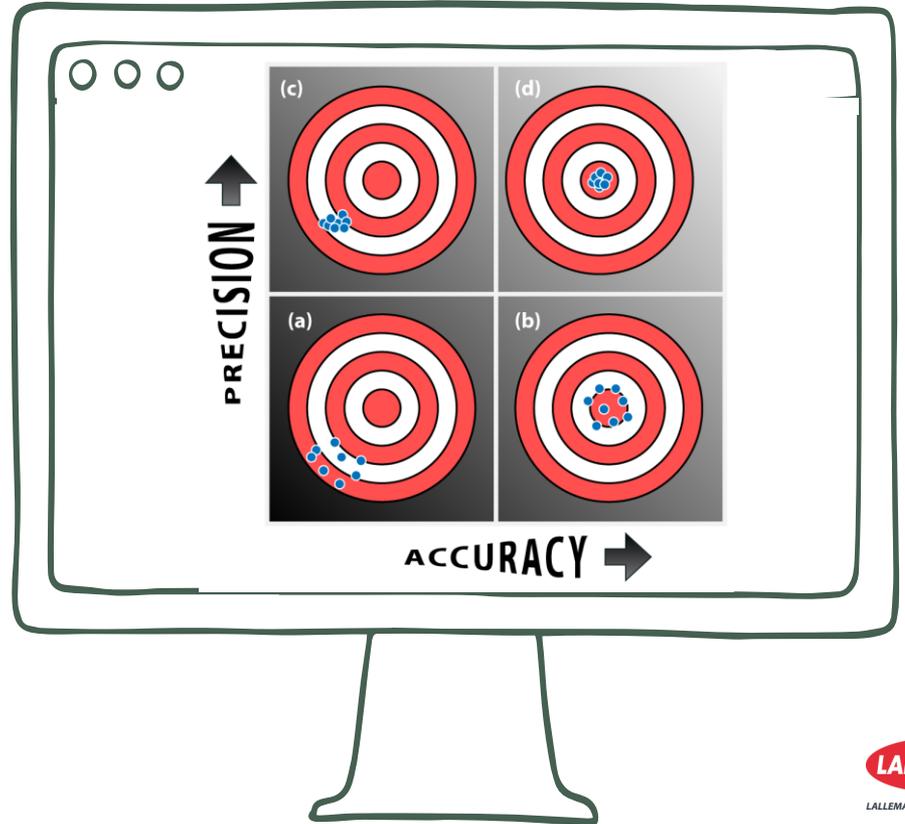


TECHNOLOGY HELPS US ACHIEVE

- Sustainability
 - Economic
 - Environmental
 - Social
- Public good (consumer) – quality milk (longer life, MUN, SCC, fat, protein etc)
 - Price, availability & choice
- Animal health and welfare – public or social license to operate.
 - Responding to heat stress
 - Antibiotic use / antibiotic resistance (ONEHEALTH)
 - Cow comfort / cow signals (increased barn dairies / feed pads / PMR / TMR?)
- Being driven by accuracy and precision of the technology to make better decisions and increase herd productivity

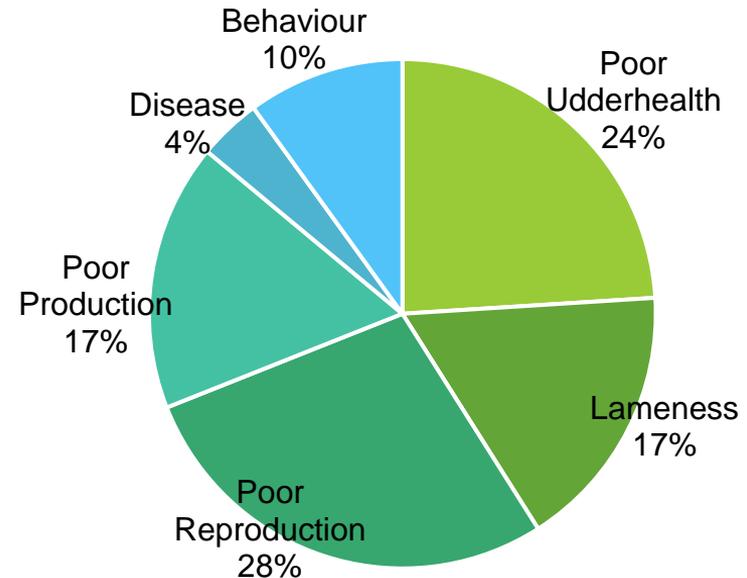
HERD PRODUCTIVITY – WHAT CAN WE MEASURE?

- If we can't measure it, we can't manage it!
- Genetic improvements – performance
- Reproduction success/calving%
- Milk Production
 - Litres of milk
 - Components (Fat and Protein)
 - Quality Parameters (SCC etc)
- Accuracy and precision of the technology is critical to success
- Lag indicators v now?



TECH & THE COW – MEASURING WHAT?

- Primarily driven by “Reproduction”
- We know that roughly **25-30%** of cows leaving the farm is from poor reproduction and that is not always the cows fault but our ability to detect a “heat / estrus cycle”
- Creating pregnant cows is the cornerstone of milk production
- It avoids the costs of empty cows (that you’ve invested in)
- Increasing deployment of technology across Australia
- Pedometers
- Collars
- Ear Tag
- **now bolus & halter technology too**



COW MONITORING BENEFITS

- Keep an eye on your cows 24/7
- Improved on farm efficiencies (change / adapt repro or treatment protocols)
- Receive early detection for issues
- Make decisions more confidently

- Save your money, reduce drug / hormone use / reduce labour / increase milk production thru shorter calving intervals / increase farm profit

- All done by
 - Increasing Oestrus detection
 - Finding ill health earlier
 - Lessen impact on milk production
 - Real time information
 - Better more accurate and timely decision making

WHAT DEVICES DO WE HAVE ACCESS TO?



PEDO
METER



EAR
TAG



COLLAR



BOLUS

..... Plus the HALTER

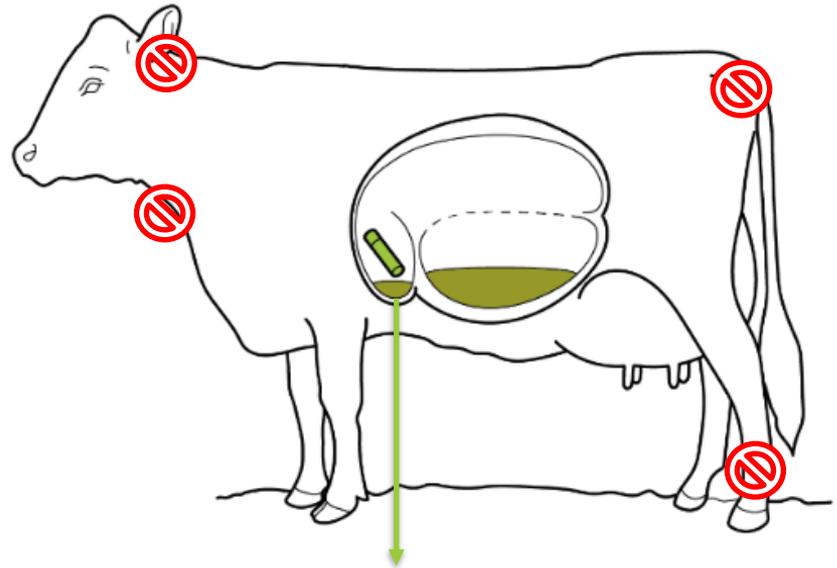
THE DEVICES

What's our
social license to
operate putting
devices ON
cows?

- Essentially, we need to break them into two groups now
 - Wearable
 - Invisible
- We should also consider their **Mode of Action**
 - External versus internal data source
 - Precision & accuracy
 - Pressure Sensor, Microphone, accelerometer, temperature sensor, pH
 - Algorithms
 - Heat Detection – oestrus
 - Animal Health –heat stress / sickness / disease
 - Animal Nutrition – diet changes, water intake, rumination
 - Management alerts – calving detection
 - BUT caution – not all devices are now created equal. Bolus technology really is leading the way

TECHNOLOGICALLY UNPARALLELED

- Bolus is administered once and remains safely in the reticulum
- Completely maintenance-free, no additional work
- No risk of injury to the animal
- No risk of loss
- No risk of slurry contamination or damaged pumps
- Highly **precise** measurements
- Parameters are directly measured, not calculated, **accurate**



rel. measurement accuracy: $\pm 0.01^{\circ}\text{C}$

INSIDE MONITORING

INSIDE MONITORING SINGLE ANIMAL PARAMETERS

Continuous measurement
with 10-minute granularity



FOUR KEY AREAS FOR TECHNOLOGY TO THRIVE



EARLY DISEASE DETECTION

Mastitis
E. Coli mastitis
Metritis & Endometritis
Pneumonia & Bovine
Influenza
Ketosis
Hardware disease
Lameness



AROUND THE BIRTH

Calving detection
Milk fever prophylaxis
Twin births (difficult birth)



REPRO MANAGEMENT

Heat detection
Fertility problems
Abortion detection



FEEDING MANAGEMENT

Feed quality issues / management
Heat stress management
Water intake/availability

WHERE IS THE VALUE PROPOSITION GOING?

1. Heat detection – profit maximisation

2. Animal health

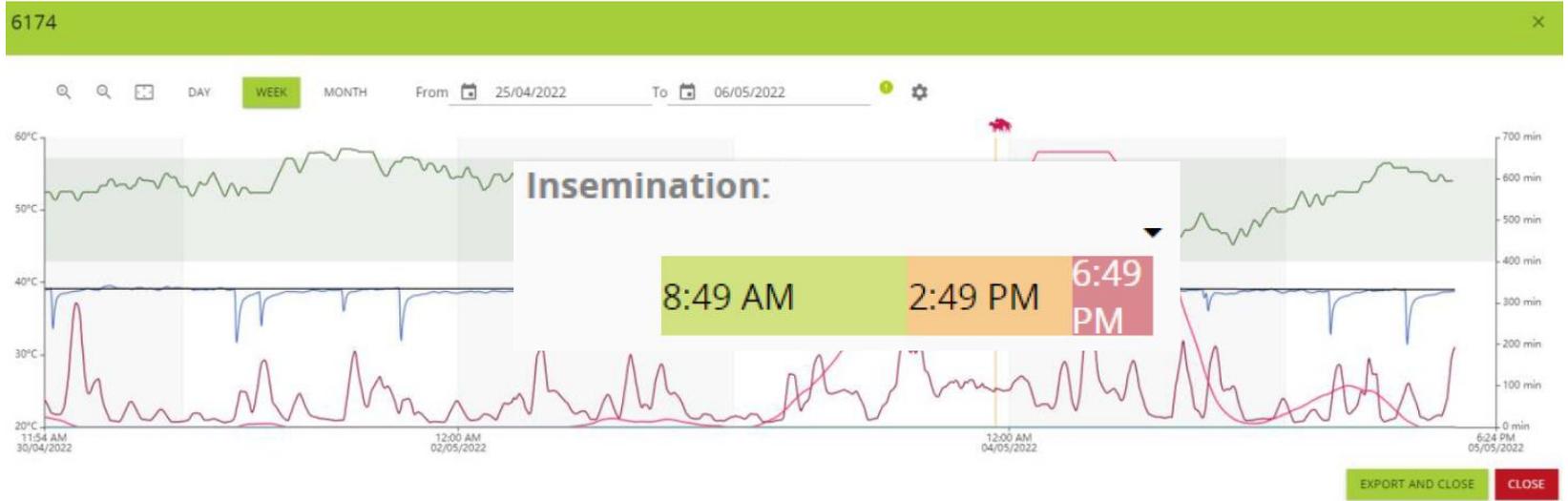
(Think like a Vet – what's the first thing a Vet does with a suspect cow?)

- Early detection is key
- Typically a cow will respond with Temp change (immune response) to disease
 - It can be 2- 4 days before a clinical response is actually determined.
 - Its possible to see the temp signature and how it relates to a disease
 - example mastitis v pneumonia
- Changing on farm treatment protocols
- Less antibiotic use from early intervention with anti-inflammatories (less vet bills!)

3. Animal nutrition

- Changing rumination, change in core body temp
- Heat Stress (drinking cycles and temperature increase – group / herd monitoring)
- Water intake (1st Limiting nutrient of milk, 86% water.....) – NEW FEATURE

1. OESTRUS DETECTION

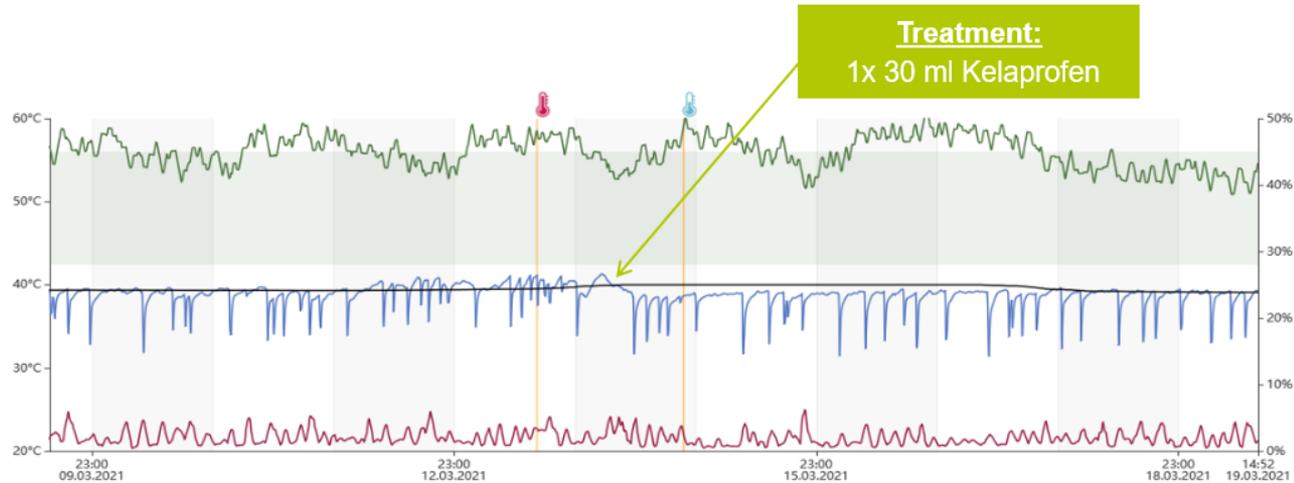


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Oestrus
Fertility

2. TEMPERATURE ALERT

Subclinical mastitis treated with anti-inflammatories, no use of antibiotics necessary!



KEY:

Optimum rumination

Normal temperature

Ruminations

Temperature

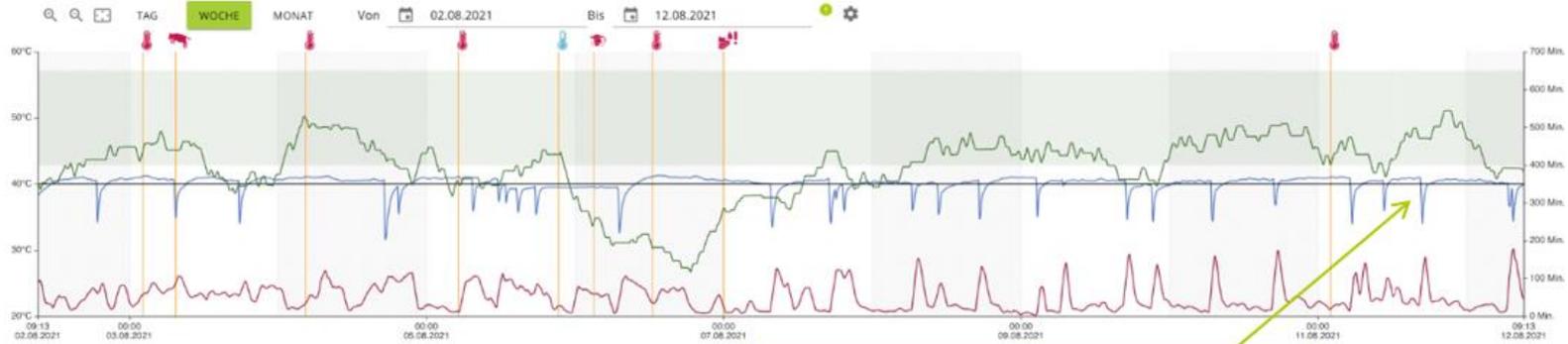
Drinking cycles

Activity



3. TEMPERATURE ALERT

Acute lameness, activity & drinking cycles correlate



Treatment:
Sole tip ulcer:
3x33 ml Duphamox
1x17ml Metcam
Block glued + bandage

KEY:

- Optimum rumination
- Normal temperature
- Ruminations
- Temperature
- Drinking cycles
- Activity



THE FUTURE IS IN YOUR HANDS

- Devices on (or in) cows will continue to add significant value on farm
- Decisions to invest include
 - Current herd management software
 - Integration (Jantec, Easy Dairy, GEA, Delpro etc)
 - Investment terms (upfront \$, infrastructure, monitoring)
 - Data access, portal, phone app etc
- Look carefully at the “precision and accuracy”
 - Bolus technology is now clearly a leader in the delivery of more VALUE
- Go BEYOND the Oestrus gain, there is significant upside
 - Health, nutrition, welfare, & behaviour – the impact on sustainability is huge

Remember

- **You're only as good as the decisions you make.**
- **Walk towards the technology – embrace it now**

THANK YOU