PLF: pathways to commercialisation

Rumen telemetry as an aid to managing water intake

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Introduction

• A brief history of eCow and PLF
• What we thought rumen telemetry would show
• What happened to the dream?
• How ideas evolve (water intake paper)
• What our experience leads us to.
History of rumen telemetry

- Patents aplenty in the 1990s and 2000s
  - Identification
  - Temperature
  - Movement
  - pH (proposed)
  - Pressure (penguin studies)
- Silsoe system developed from 2003
- First publication of successful bolus 2008
A history of rumen telemetry

- Companies formed
  - MAGIIX, Kahne Animal Health, Smaxtec, Well Cow
  - eCow
- Sales developed
  - Research scientists
  - Farmers and nutritionists
- Companies had to be refinanced or died
- Extra features added to boluses
Gartner hype cycle

- **Peak of Inflated Expectations**
- **Plateau of Productivity**
- **Slope of Enlightenment**
- **Trough of Disillusionment**
- **Technology Trigger**

**Visibility over Time**
Rumen pH Bolus

- Retained in Reticulo-rumen
- Raw data (pH & T) downloaded to handset
- Handset Uploads to internet
- Bolus lasts over 100 days before sensor fails
- Accurate +/- 0.1 pH per 30 days
- Used >3 per group
eCow now has thousands of daily pH profiles on our server.
Cause of pH problems?

- Too much highly digestible energy
- Low quality silage
- Early lactation nutritional requirements
- Faulty feeding equipment
- Poorly designed routines
- Human factors
Case study: what actually happens
And the following week
This animal was not fed on weekends
Temperature Profiles

Bolus 1342, Cow ()

Temperature plot from 30/09/2015 to 25/01/2016

Recorded on: 25/01/2016

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Clinical Diagnosis: dehydration

Cause: trough was contaminated with faeces
What is rumen telemetry good for?

- Detecting sub-acute rumen acidosis
- Replacing rumenocentesis and oro-rumen sampling
- Designing and testing new ration schemes
- Identifying heat stress
- Fixing routines
eCow future

- Develop equipment for scientists
  - NH3
  - Motility
  - NO3
- Develop systems to help vets diagnose problems
- Focus on the next big problems
  - www.virtualvet.eu tracking antimicrobials
  - www.milkalyser.com improving fertility monitoring
Summary

- Commercialising PLF requires persistence
- Problems on farms are not theoretical
- Dairy cows are not being pushed to their limits
- Focus on the decision the farmer can make

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