Precision flock management: an overview

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What is precision farming?

“You can’t control what you don’t measure”

• Monitoring and measuring of on farm data and performance;
• Accurate data collection;
• Goal is to help producers/ managers make more informed management decisions;
• Lead to improved health, welfare and performance;
• Cost effective performance
What are we talking about?

• Understand the variability in a flock to select the most productive sheep;
• Identify best and worst performers;
• Ensure market specifications are met;
• Identify early onset of disease;
• Maximise performance
• Effective utilisation of feeds and nutrients
• Benchmark performance

PROFITABILITY
How does it apply to you?

• Identify what you want to manage more effectively;
• What do we need to monitor to help us;
• Work out how to collect this data, whether that be manually or through the use of technology;
• Analyse data;
• React or make changes based on this.
Research and development

DEAR DAD,
FIRST DAY IN SCIENTIFIC FARMING WAS GREAT.
CAMPUS IS NICE.

LOVE,
BILLY

P.S. YOU'RE PLANTING
THE CORN ALL WRONG.

Courtesy Iowa State University.
Walk over weighing (WOW) systems

What does it do?
• Remotely captures animal’s identify and weight;

How does it do it?
• As animal walks through gate/race to access feed or water, a panel reader records each animal’s RFID tag;
• Sheep then moves over electronic weighing platform where weight is estimated and sent to a data logger with RFID info;

Why would it be useful?
• Reduce labour and stress;
• Record growth rates and monitor health;
• Track growth rates accurately
Remote drafting

• Allows animals to be drafted on multiple criteria for supplementary feeding, later treatment or slaughter;
• Orange Agricultural Institute
• Average of 1-3 drafts a day
• Trialled on 130 sheep for 3 months,
• Drafts 100 sheep in 2 minutes;
• Voluntary
Grass management

- Yara trials looking at N sensor for grass;
- 3 yr TSB funded research project looking at increasing grass yields;
- Identify spatial variation in N fertiliser;
- Metre by metre basis;
- Can it double grass yields?
- Challenges – mixed sward varieties, different grass cuts etc.
Sward measurement

• How can we accurately measure sward herbage quality and quantity?
• Unmanned aerial vehicles (UAVs);
  • Australian farmers already using satellite images to measure and manage pasture;
Foraging behaviour

• Need to know when, where and how much forage an animal is eating;
• Bioacoustics (use the sound of grazing to know this?)
• Bioacoustics already used in dairy;
  • Can this be applied to more extensive systems?
Precision grazing

- Controlling access to pasture through automatic gates, virtual fencing, monitoring of grazing behaviour and sward measuring

- Determine animals position;
- Deliver acoustic or electric warning;
Why use virtual fencing?

• Guide animals to fresh pasture;
• Lead to shelter if bad weather forecast;
• Protect from environmental sensitive areas/watercourses;
• Could combine with other sensors to pick up more detailed information
• Innovation for Agriculture (IfA);
• 14 Societies across England;
• Creating a new extension service;
• Small hubs of technical specialists;
Farmer led organisation dedicated to the promotion of research and technology;

Requirement to produce 50% more food by 2030 whilst also increasing biodiversity, reducing use of non-renewable inputs, reducing soil erosion and air and water emissions;

2030 is less than 17 harvests away ....
Figure 1: Total factor productivity in agriculture for selected countries relative to the United States 1996 level (indexed)
• IfA looking to pull research together and close the gap between research and farm practice;
• Network of technical hubs;
• Populate website, publications, presentations;

• Events – conferences, seminars, on-farm, webinars etc;
• Work with leading farmers;
• Feed back info into science and research base.
Thank you!