INFORMATION SHEET

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Precision Livestock Management – Research in action

Case Study: Data Muster

Part and parcel of the romance of north Australia's cattle industry are the extreme wet and dry seasons, the big skies, vast expanses of bush, and the ringer's life of mustering big mobs out from the scrub.

The trouble for the beef industry is that this tough environment is also tough on the business bottom line. Case in point being the low fertility rates in northern Australian herds, where 47% calving rates are normal, according to industry body Meat & Livestock Australia (MLA).
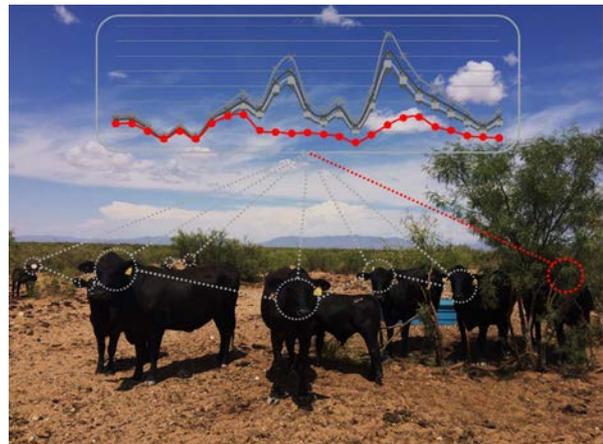
Calving rate has a massive impact on profit - the more calves born per cow, the more productive and profitable a herd is, and in southern areas cattle breeders average close to 90%.

MLA research also shows that the top 25% of producers in the region (ie those operating profitably) are acutely focused on their genetics, their pastures, and their labour efficiency. As a result they achieve higher reproductive rates, lower mortality rates and heavier sale weights.

Overcoming those barriers to profitability for the bottom 75% of producers is new innovation from CQUniversity's Precision Livestock Management (PLM) program, led by Professor Dave Swain in Rockhampton. Forming part of CQUniversity's Institute for Future Farming Systems, the PLM team is on the cusp of rolling out a groundbreaking new individual animal monitoring technology onto grazing properties across Central and North Queensland.

Known as 'Data Muster', the technology integrates on-farm walk-over-weighing systems, low-band width data transmission technology, and sophisticated analysis systems to deliver real time information about individual animals and infrastructure direct to a mobile app.

"The challenge facing the North Australian beef industry remains the same as it did a century ago: identifying superior genetics which can thrive in harsh and remote environmental conditions, with limited human intervention," Prof. Swain said.

"With a fully integrated Data Muster system, graziers will be able to monitor their property, each of their animals and even the amount of water in remote troughs, all in real time from the homestead.

"This will not only improve their profitability by cutting down on labour costs, it will improve their herd management decisions by providing them with information on cattle weight and suitability for market, whether or not a cow is pregnant, when she has calved, and vital genetic data such as the maternal parentage, reproductive efficiency and growth rates."

Data Muster has been developed over the last five years and tested in real-world conditions at Belmont, a research property just north of Rockhampton owned by farmer association, AgForce.

Now in its final phases of proof of concept, CQUniversity will work with a range of industry partners to undertake commercial field trials beginning in 2017 to test the Data Muster system on privately owned properties around Queensland.

"End-user engagement is a crucial part of all our agriculture research at CQUniversity, and this pilot trial is a crucial step as we begin discussions with potential commercialisation partners," Prof. Swain said.

"An added benefit of the pilot trial will be to open the flow of phenotypic data to the industry's genetic analysis system Breedplan. We believe that if Data Muster is rolled out across northern Australia, the information gathered will dramatically enhance analysis of genetic linkages between herds, allowing producers to more accurately select bulls and cows which are highly fertile, and whose progeny will grow faster than their ancestors while consuming less pasture.

"For the producer this means more beef produced per hectare, bolstering their bottom line and the nation's export returns; for the consumer it means industry can select genetics that are known to produce tender beef; and for the environment it will reduce the amount of grazing pressure on ground cover and waterways."

But that won't be the end of the story for the PLM team, which is already working to expand the scope of the app to provide predictive capability to further improve on-farm decision making.

This will include: pasture monitoring and weather data to forecast available nutrition and stocking capacity; price signals from abattoirs so that producers can determine when they have stock that fit market specifications; and meat quality information for processors, with MSA grading and meat tenderness directly linked to on-farm growth rates and animal nutrition.

"While conditions out in the big country are as challenging as ever, it's an exciting time to be working with producers and industry partners to make a real difference to the profibability of northern beef producers," Prof. Swain said.

Data Muster – How it works

- Strategically placed weigh scales, known as Walk-Over-Weighing systems, capture the daily weights of individual animals as they walk to water troughs
- Taggle telemetry systems capture and send data on individual animal location and water levels in troughs
- Data is automatically analysed on-site using Raspberry Pi units and transmitted to a cloud-based server.
- Low-band width technology is used to overcome remote internet access issues
- Data is presented to farmers in a user-friendly app display which supports improved herd management decision-making.