

ALM Tech News

No. 11



Meat for thought

One area of investigation within ALM Tech is to determine the potential of using dual energy x-ray absorptiometry (DEXA) to predict animal age. In sheep, age, as classified by dentition, is used in Australia to classify carcasses as lamb or hogget. Whilst teeth eruption is currently acknowledged by Meat Standards Australia (MSA) as a categorical description of age, there are questions being asked as to whether this description is a good indicator of class. Recently, the Sheepmeat Council of Australia proposed changes to this description.

As part of this Project, an experiment led by Fiona Anderson used DEXA images to determine R values for every bone pixel and the mean of the R values for each carcass image. Findings indicated that DEXA could differentiate lamb age. However, at this stage precision is relatively poor and more sophisticated image analysis work is required to form a definitive result.

An expansion of this research could also demonstrate the value of DEXA in predicting eating quality. Research has shown that ossification in cattle is a better indicator of beef eating quality prior to skeletal maturity. This reasoning will be applied to lamb to determine if there is a link between age, bone mineral content measured by DEXA, and eating quality.

Another key initiative being driven from the ALM Tech project has been the inception of the Industry Calibration Working Group. This group is tasked with creating a calibration and auditing structure for all new measurement technologies that ALM Tech develops and validates. Systems for industry calibration and auditing will be lodged with the newly formed Objective Carcass Measurement Taskforce to debate and endorse prior to industry wide roll-out. The ALM Tech team recognize this as an essential component to the successful delivery of new technologies to industry. In effect there is no point in providing a new measurement device without also developing the industry system to regulate and audit that measurement. Currently the Industry Calibration Working Group is focused on calibration and auditing systems for devices that measure lean meat yield, such as DEXA, and intramuscular fat.

Lastly, it is with some sadness that we say farewell to Jo Pluske, our current ALM Tech Business Manager. Jo has played a key-role from the outset of the ALM Tech project in helping to develop our administrative and financial structure. Jo's efficiency and professionalism has become well recognised, hence it is hardly surprising that her recent grant applications for new projects have been successful. Indeed, rumour has it that the lure of exotic international travel associated with one project has finally convinced her to jump ship! We wish Jo well, and thank her for her outstanding administrative support.

If you have any questions or comments pertaining to the Project please let me know,

Graham Gardner

Principal Investigator ALM Tech Project
 Murdoch University
 Murdoch, Australia
 Phone (mob) 0408 160 452
 email g.gardner@murdoch.edu.au

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Program E: Program Executive

Program leader: Graham Gardner

As of 13th October 2017, Laura King will take over from Jo Pluske as the ALMTech Business Manager. Laura has an undergraduate degree in engineering, a PhD in Creative Writing and has experience in project management.

Initially, Laura will work on the ALMTech project on Mondays and Tuesdays. Please contact her using the new Project email address, almtech@murdoch.edu.au

Jo said that it has been a privilege to work on this Project. She thanks all involved for the help they have given her and wishes everyone success in achieving the research outcomes.

In early September, Garry Griffith and Nikki Zhang, a PhD student from UNE, spent two days with Graham Gardner to collect information for their research project. This work contributes to sub-program E.3 (industry liaison and value estimation).

P1: Development of Lean Meat Yield technology

Program leader: Graham Gardner

Recently the Lamb Value Calculator Mk2 has been released in prototype form for scrutiny. Importantly this new version can make use of inputs from GR tissue depth, or from DEXA or CT measures of carcass composition. These composition indicators in conjunction with carcass weight are used to predict cut weights. These equations, developed by the team at Murdoch University, were derived using data from the Sheep CRC funded bone-out of DEXA and CT-scanned lamb carcasses. Chris Smith has embedded these equations into a re-worked architecture of the Lamb Value Calculator package that provides greater flexibility in cut selection.

Recent research from the University of Technology, Sydney has focused on estimating beef and sheep carcass traits based on 3D shape curvature descriptors. Initial results suggested that curvatures of the hindquarter produced a strong relationship with lean meat yield.

P2: Development of eating quality (EQ) measurement technology

Program leaders: Dave Pethick & Pete McGilchrist

Researchers from Texas Tech University and the United States Department of Agriculture will visit in October. They will be trialling an E+V camera that can determine marbling score.

The first meeting to discuss muscle ultrasound for glycogen, as part of P2.3, was recently held in South Australia. The purpose of this work is to determine if there is potential to effectively detect differences in ultrasound muscle density in high/low glycogen cattle. If so, then further work will determine the relevant ultrasound device to use, the feasibility of obtaining raw images and the best approach for subsequent analyses.

P3: Development of robotic technology

Program leader: Christian Ruberg

In this Project research related to offal will include animal health, product suitability and food safety aspects. Offal inspection is demanding from a biological and financial perspective. It is anticipated that objective measurement will lessen these challenges.

By incorporating objective measurement into the system it is anticipated that there will be a decrease in carcass downgrade numbers. This being the case, processors will obtain direct benefit and importantly will be able to provide better feedback to producers.

P4: Industry Databases

Program leader: Daniel Brown

Industry feedback: Planned Activities

To obtain industry feedback, case studies are about to be in P4. Two supply chains have been identified and researchers will work closely with them.

This work complements that being done in P5 so researchers in both programs are working together on this activity. Further, it is relevant to research being done by the Sheep CRC and Supply Chain Officers. Collaboration with each is therefore important.

P5: Data Decision Systems

Program leader: Wayne Pitchford

The success of P5 is very much contingent on collaboration with project partners and industry. As an example, Tim Hollier (Senior Specialist, Beef and Sheep, Agriculture Victoria) is currently working with Wayne and Dean Miller. This work involves supply chain officers in key businesses.

The newly developed architecture of the Lamb Value Calculator Mk2, provides the blue-print for Chris Smith to develop The Beef Carcass Value Calculator. An aim of the calculator is to determine what lean meat yield is worth to beef producers, based on using lean meat yield information from a variety of measurement devices to predict beef cut weights.