

ALM Tech News



Economic evaluation of the ALM Tech project

One of our underpinning tasks is to estimate the value of the ALM Tech project to the Australian beef, sheep meat, and pig meat industries. Garry Griffith, Yue Zhang and Stuart Mounter of the University of New England Business School have now developed, calibrated and validated economic models to provide the framework to assess the value of ALM Tech's advances in objective measurement technologies. The beef and pig meat models have been peer reviewed and published (Australasian Agribusiness Review: Volume 26, 2018), and their paper on the sheep meat model is currently under review.

Griffith et al. have used their models to replicate six scenarios applicable to beef and lamb, which were previously defined within the 2017 Meat & Livestock Australia (MLA) report "*Development of supply chain objective measurement strategy and value proposition to stakeholders*". These scenarios cover the range of possible uses of new information potentially available through advances in objective measurement technologies. A new set of scenarios is currently being considered for the pig meat industry. The scenarios modelled thus far include:

1. **Increasing lean meat yield, but maintaining or improving eating quality.** Together, Lean Meat Yield (LMY) and Eating Quality (EQ) determine total carcass value. This scenario applies to 100% of lamb production and 60% of beef production where reliable environment and broad market access reward a mix of quality and yield.
2. **Increasing lean meat yield, but maintaining meat colour.** Dark meat colour imposes significant discounts on beef carcasses. This scenario applies primarily to 30% of beef production in more unreliable northern environments where conditions make it difficult to get a return on investment in EQ in Scenario 1.
3. **Increasing feedlot marbling quality, but optimising turn-off times.** This scenario applies to feedlot animals destined for high quality markets where marbling has greater impact on finished product value than lean meat yield, but more efficient feed conversion (negatively correlated to marbling) is required for higher profitability.
4. **Improving animal health.** This scenario considers the value opportunity for managing animal health issues that impact both the production and processing sectors across the beef and lamb industries.
5. **Improved processing efficiencies.** This scenario considers the processor benefit that arises from improved carcass sortation to customer specifications using accurate carcass objective measures.
6. **Fabrication of purchased livestock to optimise value.** The scenario considers how objective measures enable more accurate processor sales pricing decisions and optimisation of profit from boning room operations by extracting more value from carcasses.

ALM Tech recently convened an economic workshop in Melbourne to discuss Griffith et al.'s first-pass evaluation and the way forward. Attendees included Garry Griffith, George Waldthausen (MLA), Frank Dunshea and Evan Bittner (University of Melbourne), Michelle Henry (Gundagai Meat Processors), and George Revell (AMPC agricultural economist).

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Executive Program

Program leader: Graham Gardner

In addition to making significant progress with the project's economic evaluation (cover story), we are currently redesigning our ALMTech logo, with several concepts under consideration, plus our ALMTech website is still undergoing redevelopment. We hope to unveil both our revamped logo and website shortly!

Program 1: Development of Lean Meat Yield (LMY) technology

Program leader: Graham Gardner

Program 1 continues to make stellar progress with its low-cost, portable microwave technology for measuring back fat depth. The hand-held prototype is now in use, and already over 500 lambs and 100 cattle have been scanned, both live and dead. Testing of this device in commercial abattoirs and feedlots will continue throughout February and March. ALMTech's Dr Jayaseelan Marimuthu has commenced training others around Australia to use the device.

The Murdoch team are also in full swing undertaking the cross-site calibration of the Bordertown and Brooklyn DEXA scanners. This final phase of testing will demonstrate that the same estimate of lean meat yield percentage can be attained from any DEXA device anywhere in Australia. This is a crucial "proof of concept" demonstration that should give industry good confidence for future DEXA investment in future years.

Program 2: Development of Eating Quality (EQ) measurement technology

Program leaders: Dave Pethick & Pete McGilchrist

Meat Imaging Japan (MIJ) have developed algorithms for outputting AUSMEAT and MSA phenotypic measures for the beef loin from data and images collected by the Murdoch and UNE teams over the last 18 months. The traits include EMA, total rib fat depth, MSA marbling score, AUSMEAT marbling score, meat colour and fat colour. These algorithms will be tested and adjusted to further improve accuracy.

On another front, the repeatability both within and between Frontmatec hyperspectral beef cameras was tested, demonstrating robust estimation of Beef IMF.

Program 3: Development of robotic technology

Program leader: Christian Ruberg

Rapiscan have installed a single energy x-ray CT scanner at Scott Automation & Robotics in Tullamarine

for preliminary scanning work and sensing upgrades. Rapiscan are augmenting their device with a camera to allow surface imaging, for application to offal scanning and sortation.

4DDI continues to develop designs and conduct trials for their robotic x-ray CT scanner. They are currently focussed on IMF measurement, both in feedlots and in plants.

Meanwhile, NucTech have demonstrated their capability and industry engagement by delivering a prototype DEXA unit for evaluation.

Program 4: Industry Databases

Program leader: Daniel Brown

In preparation for the installation of DEXA, Program 4 continue to help processors to understand their current data capture and systems that manage data and producer feedback. On-site visits have identified issues which may be impeding flow of data, considerations for the integration of DEXA into processor system frameworks, and opportunities to enhance feedback systems, producer engagement and use of feedback.

Program 4 are also aligning with other activities regarding the enhancement of data capture and feedback systems, including Health4Wealth and DEDJTR producer engagement.

Breed societies have the chance to be involved in Program 4's research into the genetic evaluation of eating quality and lean meat yield traits. Program 4 is calling out for animals with known genetic background, as well as relevant production and on-farm data.

Program 5: Data Decision Systems

Program leader: Wayne Pitchford

Program 5 continues to undertake significant engagement activity—establishing new collaborations, strengthening existing relationships, and mapping data flow—with major supply chains who plan to adopt the Lamb Value Calculator (LVC) and Beef Value Calculator (BVC) as real-time business tools.

Another recent achievement has been the development of a carcass optimisation tool. This tool has evolved from the Maths-in-Industry workshop held early last year. Following this workshop, the Adelaide University maths group was contracted to develop this device, which now includes a 'user-friendly' graphical interface. Program 5 have deployed this device for beta testing with one collaborating lamb supply chain, and Wayne Pitchford and Sean Miller intend to road-test the prototype optimiser at the March Supply Chain Group meeting.