

final report

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2014-15 Coordination of Meat Science and carcase grading – Lamb and Beef

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Abstract

This report summarizes co-ordination activities associated with the management of R&D and adoption of Meat Standards Australia and the Lamb Supply Chain Group.

Significant achievements include contributions to:

- Transparent international collaboration on the science of MSA with Europe and China
- Prototype cuts based MSA model for lamb developed which has emphasized the need for more sophisticated carcass and meat quality grading.
- Development of probe (mechanical, impedance and NIR) and hyperspectral imaging based measurement of lean meat yield and meat quality for beef and lamb carcasses in collaboration with Carometec, MLA, MLA donor company and the Sheep CRC
- Key awareness and adoption activities for the development of lean meat yield and meat quality measurement in lamb with key processors and retailers.
- Maintained a strong relationship between the Sheep CRC/Lamb Supply Chain Group and MLA.
- Development of future R&D directions and plans for lean meat yield and eating quality in lamb and sheepmeats
- Adoption and awareness activities for beef and lamb producers

Executive summary

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1 Project objectives – Section

1.1 Management associated with Meat Standards Australia

- Prepare agenda items and reports plus participate in the MSA sheep and lamb pathways committee via the Lamb Supply Chain Group
- Assist with the development and implementation of MSA and MSA Mark 2 at the direction of MLA including strategic meetings with MLA, processors and retailers.
- Design and manage new Lamb & Sheepmeats R&D including the development of a new cuts based system (MSA Mark 2)
- Participate in the MSA Pathways Committee
- Provide consulting advice to the MSA R&D team.

1.2 Carcass grading in lamb & sheepmeats

- Design and manage the development of new Lamb & Sheepmeats R&D that is consistent with the 2.1 Eating Quality strategy
- Contribute to the management of the collaborative carcass grading projects between with Carometec, Food Processing Equipment, AMPC and MLA.

1.3 Management associated with the Lamb Supply Chain Group

- Undertake targeted interaction with key supply chain collaborators at the direction of MLA

1.4 Contribute to MLA management and awareness activities as directed by MLA

- At the direction of MLA contribute to awareness activities such as Ewetime, Meat Profit Days, Supplychain field days and More Beef from Pastures activities.
- Attend MLA management activities as directed by MLA

Milestones

Achievement Criteria		Due Date
1	Achievement of objectives and progress report on those objectives submitted to and accepted by MLA	10-Dec-2014
2	Achievement of objectives and final report on those objectives submitted to and accepted by MLA	31-June-2015

2 Results and discussion

2.1 Management associated with Meat Standards Australia

Beef:

The key activities included:

- Contributions to MSA pathway meetings including the following special projects:
 - organising of an open session of the Pathways meeting with Profs Hocquette (INRA, France), Scollan (Uni Aberystwyth) and Meng (China Agricultural Uni), 15th September, Sydney, 2014
 - organising the International meeting on Beef and Lamb carcass grading to underpin consumer satisfaction for 20-21st August, 2015, Paris.
- Developed 2 research applications on behalf of the MSA pathways team
 - The effects of stress on sensory and meat colour characteristics of beef (AMPC application)
 - Is fresh beef colour measured at abattoir grading a reliable predictor of fresh and retail colour at retail (AMPC application)
- Initiate collaboration with Prof Meng (China Agricultural Uni) to undertake an Australian/Chinese consumer comparison study using a variety of beef cuts and cooking methods – project to be developed and submitted to the Pathways committee.
- Attend the “The First Symposium on the Chinese National Beef Cattle Nutrition, Feeding and Industry Economics” in Beijing and give a presentation titled “Australian MSA system for evaluation of beef quality by assessment of eating quality”, June 24th-July 3rd, 2015 [Fully funded by Chinese].
- International collaboration associated with supervision of MLA PhD student Sarah Bonny working with analysis of beef consumer data derived from France, Poland, Republic of Ireland and Northern Ireland [part of normal University business - for information only]
- Updating MLA on the activities and planning for the EuroBeef Horizon 2020 project being developed in Europe (8 collaborating countries) for submission on June 11, 2015.
- Contributions to the Southern Beef Compliance project (Project code B.SBP.0110).
- In collaboration with Carometec submitted an AMPC project to develop and test a hyperspectral imaging solution to grade meat colour and marbling in beef carcasses (submitted in April, 2015).

Lamb/Sheepmeats:

The key activities included:

- Contributing to the management of the slaughter/meat science components of the MLA WA Recourse flock.
- Managing the statistical analysis by Tony Pleasants to develop a cuts grading scheme for lamb which is linked carcass and eating quality parameters measured post slaughter. A draft lamb MSA model has been developed to predict the eating quality of the short loin and the topside which has been presented at a number of Industry forums.

Meetings associated with management of MSA research:

- Contribution to the organization plus attend the open meeting of the MSA pathways committee and Southern Beef Compliance project (Sydney), 15-16 September, 2014.
- Presented an update of MSA lamb development to the MSA Lamb and Sheep meats Task force (Sydney), 26-27th June, 2015

Days worked = 5

2.2 Carcass grading in lamb and sheepmeats

- Contributions to the management of the Carometec MDC contract (P.PSH.0631) for the development of (i) a GR depth and IMF impedance probe and (ii) a hyperspectral imaging hand held camera.
 - Probe: The GR component of the probe can in principle measure the depth at the GR site. However the impedance based measurement of IMF has proved to be unsuccessful despite 2 iterations of hardware and the collaboration of Prof Leigh Ward (Uni Qld), an expert in impedance technology. A report has been produced by Carometec and the recommendation is to stop any further work on impedance (with respect to this probe). The probe will be further tested for GR measurement and indeed the depth reading it gives over the GR site for its prediction of CT lean. Further 'depth' testing will be undertaken by JBS at their Bordertown plant. Finally Carometec have agreed to analyse the available data they have received for the impedance component of the probe to measure C fat and C muscle depth.
 - Hyperspectral imaging: The first prototype camera arrived at Murdoch University in February 2015 and images were collected with the Carometec senior research engineer Thomas Laurisden. These images were used to fine tune the wavelengths for future use and now a mark II version of the camera has been delivered back to Murdoch (June, 2015) for further testing on MNLA Resource Flock lambs in collaboration with the Sheep CRC.
- Carometec has agreed to lease their Nitform NIR system for testing in lamb – this will be a Sheep CRC project.

- Face to face discussions were undertaken with Carometec (Copenhagen), on the 29th August 2014 as part of a trip to attend the 65th European Association of Animal Production conference (Copenhagen), 23-31 August, 2014 [funded by Murdoch University].
- At the request of the Lamb Supply Chain Group Pethick drafted the preliminary research proposal based around objective carcass measurement for the Rural R&D Profit Program funding stream released by the Federal Department of Agriculture. Negotiated with AMPC and Harvey Beef to become a partner. Subsequent to this, assistance was given to Graham Gardner and Richard Apps to write the final full application (unsuccessful).
- Managed strong and transparent communication between the Sheep CRC and MLA with respect to carcass grading R&D.

Days worked = 7

2.3 Management associated with the Lamb Supply Chain Group

Pethick attended all Lamb Supply Chain meetings plus a number of targeted interactions with key supply chain partners were undertaken to create awareness and adoption of the new research on lean meat yield and eating quality – the extra meetings included:

- JBS engagement meeting, Melbourne 23rd September 2014
- JBS engagement meeting, Melbourne 22nd October 2014
- Coles engagement meeting, Melbourne 18th February 2015
- Woolworths engagement meeting, Sydney 19th February
- JBS engagement meeting, Melbourne 21st April 2015

JBS have been very strong supporters of the targeted Lamb Supply Chain Group interactions. Achievements include delivering economic modeling which has shown the value of lean meat yield and their support for a more sophisticated eating quality assurance system to underpin their top lambs brands (i.e. Great Southern Gumtree). Steps in this direction include the use of a GR knife, undertaking experiments on the development of DEXA based lean meat yield determination and the full support for Livestock Data Link.

The Coles retail chain is strongly interested in re-shaping their lamb business. Coles for the first time attended the Sheep CRC Coffs Harbour planning meeting and have undertaken a project on analyzing their lamb fabrication via the Lamb Value Calculator with the intention to underpin carcass specification for lean meat yield. The Coles supplychain has also expressed an interested to be kept informed on the yearling sheep meat project – are ppt on all MSA yearling related work has been sent to Garry McAlister for presentation to Coles (by Garry on 12th June, 2015)

Woolworths are keen for further engagement however at this time they have had considerable staff turnover and their expertise in lamb is limited in the short term.

Days worked = 7

2.4 Contribute to MLA management and awareness activities as directed by MLA

Direct contributions to MLA awareness activities

- Provision of eating quality, lean meat yield and carcass grading powerpoints to MLA and Sheep Genetics.
- South West Prime Lamb Group 20 year celebration (Hamilton), 23rd July, 2014. Presented talk on factors affecting eating quality in prime lamb
- Grower Group Alliance tour and workshop (Murdoch University), 20th August to show case MLA and Murdoch Uni Meat Science related R&D.
- Merinotech Field day (Yarrak, Kojonup, WA) 23rd October, 2014
- JBS Tasmania/King Island producer of the year awards (lamb & beef) workshop (Launceston), 19-21st November, 2014
- MerinoLink conference (Primary Industries Centre, Riverina TAFE, Wagga Wagga), 4-5th March, 2015
- JBS Great Southern beef/lamb producers of the year awards workshop (Crown, Melbourne), 14-15th May, 2015

Industry planning:

- Red Meat Advisory Committee – regional meeting for MISIP planning (DAFWA, Perth), 2nd October, 2015
- MISIP 4 team planning meeting (MLA Sydney), 11th February, 2015
- Meeting with MLA (Richard Apps) to plan objective carcass measurement R&D (Armidale, NSW), 22nd April, 2015
- Genetics consortium workshop (Harbour View, Sydney), 18-19th May, 2015

Days worked = 11

Industry & Scientific conferences attending/presented at: (for information only)

- Sheep CRC final conference (Adelaide), 9th July, 2014
- LambEx (Adelaide) 10-11th July, 2014
- 65th European Association of Animal Production (Copenhagen), 23-31st August 2014
- Combined International Symposium for Ruminant Physiology and Herbivore Nutrition conference (Canberra), 7-12th September, 2014
- More Sheep Forum (Katanning, WA), 9th October, 2014
- Sheep CRC/Pork CRC/MLA Post Graduate Conference (Quarantine Station, Sydney), 2-5th November, 2014
- Nutrition Society of Australia Annual meeting (Hobart), 25-28th November, 2014
- The First Symposium on the Chinese National Beef Cattle Nutrition, Feeding and Industry Economics plus visit abattoirs and beef supplychain (Beijing, China), 24 June-3rd July, 2015 – presenting on the speak on the MSA system.

Other Industry trips: (for information only)

- Indonesia Beef supplychains discussions/seminars (Jakarta, Indonesia) 21-26th February, 2015. Meetings and meat science presentation to 3 beef supplychains with introduction from AUTRADE (Santosa Agrindo (Santori); Great Giant Livestock; Karya Anugerah Rumpin).