

final report

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MSA forum at International Congress of Meat Science and Technology 2018

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Abstract

The purpose of this project was to conduct an MSA forum at the 2018 International Congress of Meat Science and Technology (ICoMST) to be hosted by Australia for the first time in 30 years. The forum aimed to facilitate international discussions and collaboration around meat science and eating quality, as well as showcase the success of the large and sustained research project that lead to the development and final implementation of Meat Standards Australia.

ICoMST 2018 was held in Melbourne at the Grand Hyatt, 12th-17th August. The MSA forum was held as a concurrent session on Monday 13th August 2018. The total registration for the ICoMST conference was 489 delegates from 37 countries with approximately 40% of delegates (196) attending the MSA forum.

The proceedings of the conference will be published in the French industry meat journal “Viandes & Produits Carnes”.

Executive summary

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1 Project objectives

The high level aims of this project are to:

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Project objectives:

The conference organisers (YRD) will achieve the following:

ICoMST delegates will be free to choose attending the MSA workshop or indeed the main stream ICoMST program as the 2 will be run as concurrent sessions .

MLA delegates (not registered for the full ICoMST) would register at an agreed price for the 1 day MSA event via a web link on the ICoMST conference website. The MLA delegates could also attend the Monday morning ICoMST program.

Services included for MLA will include:

- Daily catering
- Audio Visual
- Room hire
- Delegate management fee
- Conference Management including strategic planning, financial management, conference administration, marketing (discounted due to synergies with ICoMST2018)
- Speaker and Abstract Management (discounted due to synergies with ICoMST2018)
- Delegate registration and accommodation bookings
- Venue and Social Program management
- Onsite Management

Milestones

Achievement Criteria		Due Date
1	Upfront payment upon contract execution	Upon execution
2	Delivery of the MDSA forum at ICoMST	17 th Aug 2018

2 Results and discussion

The conference program and proceedings plus the congress report are available as appendices.

The MSA forum program - appendix I.

The MSA forum proceeding - appendix II.

The Final Congress Report – appendix III. **Guidelines (please don't type in this section, guidelines must be removed before submission by highlighting this section and then deleting):** This section should include the key data sets with appropriate statistical analysis. Use of graphs and tables to summarise data is encouraged. All project data should be included as an appendix or supplied electronically.

3 Appendix

Appendix I

How Australia's red meat industry has adopted eating quality science

Day 1: Monday 13 th August 2018		
0730	Registration open	Level 8, Grand Hyatt
0830 – 1035	Official Opening – ICOMST PROGRAM	Savoy Ballroom
	Session 1: Provenance and fraud detection	Savoy 1
	Click here to view the full ICoMST Program	
1035 – 1100	<i>Morning Tea</i>	
	MSA DEVELOPMENT	<i>Chair: John Thompson</i>
1100 – 1115	Overview of MSA beef	Mr Michael Cowley, General Manager, Meat & Livestock Australia
1115 – 1130	Sensory evaluation using untrained consumers	Dr Rod Polkinghorne, Polkinghorne Pty Ltd
1130 – 1145	The MSA lamb and sheep meats model	Prof Dave Pethick, Murdoch University
1145 – 1200	20+ years - key elements of success	Mr John Webster, AgStrat Assoc Pty Ltd
1200 - 1215	MSA - an International perspective	Dr Jean-François Hocquette, INRA, France
1215 – 1230	MSA development round table discussion - session speakers	Chair and all 5 speakers
1230 - 1330	<i>Lunch in the Exhibition</i>	
	MSA IN THE MARKETPLACE	<i>Chair: Michael Crowley</i>
1330 – 1345	MSA index - feedback and bench marking tool	Dr Peter McGilchrist, University of New England
1345 - 1400	MSA - Southern Producer perspective	Mr Trent Osborne, Producer
1400 – 1415	MSA - Northern Producer perspective Beef	Ian McCamley, Producer
1415 – 1430	MSA to underpin branding and MSA grade segregation	Mark Inglis, JBS Australia
1430 – 1445	MSA grade segregation value based trading	Tom Maguire, Teys Australia
1445 – 1500	Retail perspective on MSA and brand development	Ian Smith, Coles
1500 – 1515	MSA in the market place round table discussion - session speakers	Chair and all 6 speakers
1515 - 1630	<i>ICoMST Poster session and afternoon tea</i>	
	IMPLEMENTATION AND THE FUTURE	<i>Chair: John Webster</i>
1630 – 1645	Supporting commercial implementation of MSA	Sarah Strachan, Manager, Meat Standards Australia
1645 - 1700	MSA in the next 20 years	Rod Polkinghorne, Polkinghorne Pty Ltd
1700 – 1730	Round table – ALL speakers for 30 min open forum	All speakers on stage
MSA 20 th Anniversary Celebration, Grand Hyatt		

Appendix II

MSA forum proceedings summary. Prepared by Dave Pethick.

How Australia's red meat industries has adopted eating quality science – ICoMST 2018

In celebration of Meat Standards Australia's (MSA) 20th anniversary the 64th International Congress of Meat Science and Technology (ICoMST) ran a special MSA session on Monday August 13th. The program covered the development of MSA through to its role in the modern marketplace and what the future holds for the world's leading eating quality grading system. Leading researchers and industry practitioners presented a series of short papers which are summarised below.

Michael Crowley – overview of MSA

Meat and Livestock Australia: mcrowley@mla.com.au

The key message was that consumers are prepared to pay for an appropriate level of beef or lamb quality which is consistent across 12 countries studies so far. The MSA system is specifically designed to deliver a range of quality levels across 39 beef muscle x cooking methods. It was made clear that if beef and lamb products fail to deliver the meal performance matched to the occasion then consumers will turn to other meat or protein sources.

The next steps are a continued focus on the consumer and meeting the needs of sensory quality but also animal raising claims, product origin to the level of farm, environmental footprint and human health attributes.

The MSA system currently grades 43% of adult cattle slaughtered or about 60% of yearling cattle given few older animals such as cows are graded. The overall cost benefit of the investment by beef and lamb producers through Meat & Livestock Australia is 12.5:1 over 2010-2015 period reinforcing the benefits of a consumer focused outcome.

Rod Polkinghorne – sensory evaluation using untrained consumers

Birkenwood International Pty Ltd: rod.polkinghorne@gmail.com

The guiding principles of developing the MSA system was to focus on the consumer and customer as this is where all the financial returns to the value chain comes from. Twenty years ago it was a brave but crucial decision was that consumer outcomes would drive ALL grading decisions. The next important step was to use untrained consumers in sensory panels – at the time this was thought impossible since traditionally meat had been assessed using objective measures (shear force) or trained sensory panels – the later often trained against objective measures like shear force. However it became clear that if MSA was to predict the true population mean for eating quality preference untrained consumer were the key. Variability when using untrained consumers can be an issue but this was controlled by using strictly controlled protocols (e.g. same griller, same thickness, same

cutting lines), a latin square design to control for steak order/quality and finally using large numbers of consumers (10 consumers per cut/muscle). The current model is based on 16,771 cattle, 92,827 cuts, 120,040 consumers.

The early work asked consumers to rate beef using 13 different variables – dryness, ease of first bite, tenderness, texture and so on. The final parameters showing consistent significance were tenderness, juiciness, liking of flavour and overall liking which were then statistically combined to form an MQ4 score. This was then used to determine grading boundaries for the final consumer rating of unsatisfactory, good every day, better than every day and premium.

Next came the process of predicting the consumer scorer/rating. The first approach was a 'pathways' method which is commonly used across the world. While this was effective it could not cover off on numerous cuts and also there was a lot of meat of good every day quality that was rejected. Then came the crucial 'light bulb' moment – use the carcass grading parameters to predict the MQ4 score using an interactive cuts based system.

Dave Pethick - Lamb grading

Murdoch University: d.pethick@murdoch.edu.au

Currently the MSA lamb and Sheepmeats system is a best practice pathways approach with rules and guidelines for producers, abattoirs and retail including parameters such as sheep age category, low stress handling, chiller pH/temperature management and aging with some cut x cook recommendations. More recently modelling across a large data set of lamb cuts tested by 7,000 consumers has shown the importance of lean meat yield and intramuscular fat as additional predictors of eating quality. Lean meat yield as a -ve and intramuscular fat a +ve predictor. These traits are under both genetic and nutritional control. Accordingly, new breeding values have been commercially released by Sheep Genetics to allow producers to now select for progress in both traits. Finally there is now an active research program to measure lean meat yield and intramuscular fat of lamb carcass on line in commercial abattoirs so as to facilitate a new cuts based grading scheme for lamb.

John Webster – key elements of success (the early years)

AgStrat Assoc. Pty Ltd: jpwebster@hotmail.com

The history and foundation of the MSA were laid in the early 1990's with the recognition that beef was not satisfying consumer needs. The peak council committees agreed a beef grading scheme was needed and that it would be consumer focused. The R&D, which continues today required considerable financial support over a continuing period. To achieve this Meat & Livestock Australia undertook a 'Program funding' and NOT 'Project funding' which was vital as it delivered a continuous research effort over the 20 years. The research became global with the first international workshop to help shape the program undertaken in 1997. In conclusion change is challenging for any long established industry and only a concerted effort across the value chain can deliver new systems.

Jean-François Hocquette – an international perspective – towards a global assessment of beef eating quality

INRA: jean-francois.hocquette@inra.fr

Europe currently has similar problems of variable beef quality which Australia began to address in the late 1990's. That is beef is not meeting consumer expectations and price not a reliable indicator. However a number of studies have now confirmed a consumer driven prediction model of beef eating quality would be highly relevant in Europe.

A combined data set of beef sensory scores collected using MSA sensory protocols derived from untrained consumers from Poland, Nth Ireland, France and Ireland have shown the relevant MSA predictors where appropriate (ossification, marbling, cut, aging, hang, pHu) with some minor adjustments for small differences in consumer preference. Indeed a new French brand has been created utilizing many aspects of the MSA system. As a follow on the International Meat Research 3G Foundation has been established (managed by Poland) is likely to promote an international beef eating quality grading system in collaboration with the United Nations Economic Commission for Europe (UNECE).

Peter McGilchrist – MSA index – feedback and bench marking tool

University of New England: peter.mcgilchrist@une.edu.au

The MSA index is a single number to indicate the overall eating quality of a carcass. It is the weighted (by muscle weight) average of eating quality scores of 39 muscles cooked at 5 days aging using the most common cooking method for that muscle. It represents a single score rather than a series of individual traits and was designed to simplify the feedback systems to beef producers. Producers can readily understand the generic eating quality of their cattle and adopt genetic/management practices to improve the index relative to National percentile bands.

Trent Osborne and Ian McCamley – Producer perspectives

Hurstdale Pastoral: Trent Osborne trentoz2001@yahoo.com ;

MCC Pastoral Pty Ltd: Ian McCamley ikmccamley@bigpond.com

The beef producers have supported and indeed paid for the R&D and adoption of the MSA system since its inception. The use of MSA feedback data was highlighted as a breakthrough for beef producers to have a consumer focus by improving (i) compliance to specification and (ii) the sensory scores of their beef. The MSA index has allowed beef producers to understand where their cattle rank in terms of National eating quality scores and also allowed science and economic based decisions for changes on farm. Key break throughs have also been the rise of grass fed brands further benefiting the farm sector given much of Australia's beef is grass fed. The training programs for beef and lamb producers has hugely lifted the knowledge of the livestock farming sector and especially improved the handling and nutrition of cattle close to slaughter to minimise the incidence of high pHu or dark cutting beef. Beef and lamb producers are now changing their business from commodity to producing for a brand.

Tom Maguire – Processor perspective

Teys Australia Pty Ltd: tomm@teysaust.com.au

The long term success of the processing (abattoir) sector is driven by (i) customers and a consumer focus and (ii) slaughter livestock supply and quality. In the early days of MSA the Australian processing industry were not always united in support of MSA. Many in the sector were convinced that beef trading was all about price and that customers would not pay for quality. Moreover it was assumed that beef was just variable and this was impossible to change. Now there is total support for MSA and it is considered fundamental for to underpin successful beef brand. Eating quality language is now main stream in the processing sector and the MSA system has shown that value will in the end overhaul price. The next goal is value based trading being a combination of weight of cuts harvested from a carcass x the value of those cuts, the later heavily driven by MSA quality grade.

Mark Inglis – Processor perspective

JBS Australia: mark.inglis@jbssa.com.au

Mark described the use of the MSA index to formulate the JBS Southern branding strategy for beef. It's based around beef (and lamb) producers joining the JBS Farm Assurance program with independent auditing of some 4,500 beef and lamb producers. The Great Southern brand is derived from grass fed beef, with no hormones and antibiotics. The MSA index thresholds were explained for the overarching brand Great Southern and then tiers within Great Southern such as the elite Pinnacle and Little Joe brands. The MSA index is used to manage cuts of beef into like eating quality categories within the brands – this delivers both the appropriate level of quality and also consistent product. Using the MSA index as an in house sorting tool within the abattoir has facilitated simple and transparent communication of the performance and requirements of the company brands across the value chain from producers through to customers.

Ian Smith – Retail (Supermarket) perspective

Coles: ian.smith@coles.com.au

Coles supermarket accepts the science and best practice developed by MSA over the past 20 years. Coles has adopted the MSA's approach to assist in developing a range of domestic and export beef brands ranging from a good every day offer to premium grain and grass fed brands. It provides a clear rationale for consistent eating quality backed up by years of scientific assessment which challenges the subjectiveness of eating quality attributes.

Sarah Strachan – Supporting commercial implementation of MSA

Meat and Livestock Australia: sstrachan@mla.com.au

An important part of the MSA model development was geared to assure its commercial relevance and ease of operation across the value chain. Essentially a complex grading model connected to cut x cook eating quality prediction had to be made 'usable'. This required training across the value chain. Grader training connected to continuous quality assurance assessment was established such that there are now 550 trained graders in 60 abattoirs across Australia with a further 3,000 abattoir staff trained in the principles and application of MSA. A 1 week MSA focused meat science course has further trained 400 business decision influencers. In addition hands on training exists for wholesalers, butchers and retailers on cutting, value adding and primal breakdown to optimise cut x cook outcomes. Finally and most importantly 53,317 beef and lamb producers have been registered as suppliers of MSA eligible animals supported by on-line learning modules and 20,000 producers participating in MSA training workshops. This all supports 172 MSA underpinned brands and 3,681 end users. The next phase of international recognition via MSA branded product is underway.

Feedback to beef and lamb producers has been a feature with the development of the myMSA feedback portal where producers can access the MSA grading data and MSA carcass index. This portal is constructed to allow producers to benchmark against National and local standards.

Polkinghorne – MSA in the next 20 years

Birkenwood International Pty Ltd: rod.polkinghorne@gmail.com

A key theme was changing the industry meat description to a meal cooked result outcome based language. Carcass (e.g. dentition, age, sex) and cut description would be superseded by terms like eating quality graded (into meal results). To facilitate better carcass utilisation individual muscle identification through the boning room at line speed will be developed to sort cuts to uniform eating quality portions, with these grouped and marketed by consumer meal outcomes.

Beef cattle will deliver cuts of higher eating quality as genetics, assisted by genomics, focus more on eating quality outcomes, rather than just lean meat yield. We know already that part of the *Bos indicus* effect to reduce the palatability of certain cuts is genetically based around the

calpain/calpastatin system and in the future the status of this will be determined on farm or at slaughter so as to allow incorporation into the model.

Assessment of both lean meat yield and eating quality will advance as objective carcass measurement technologies become available. This will allow value based trading across the value chain giving incentive to beef producers to improve their cattle and lambs.

Further development of value added industrial cooking options will allow for greater utilisation of poorer quality cuts underpinned by MSA rather than unproven claims. In addition the important area of flavour will be understood in a manner that will allow the MDSA model and so the value chain to capture the value of flavour.

The International Meat Research 3G Foundation data bank initiative will be fully mature as a framework for facilitating collaborative eating quality R&D across the world, but also as the route to deliver MSA like consumer focused grading models in many countries.

Appendix III



1. Delegate Summary

Breakdown of Delegates by State (AUS) or Country

Australian Capital Territory	2
New South Wales	48
Queensland	23
South Australia	5
Victoria	70
Western Australia	17

165

Argentina	1	Netherlands	1
Australia	165	New Zealand	31
Belgium	2	Norway	2
Brazil	11	Philippines	3
Canada	8	Poland	4
Chile	2	Portugal	1
China	40	Russia	2
Costa Rica	1	Serbia	1
Denmark	9	Singapore	4
Estonia	1	South Korea	42
Finland	4	Spain	11
France	6	Sweden	4
Germany	13	Switzerland	1
India	1	Taiwan	1
Ireland	8	Thailand	12
Italy	3	United Kingdom	5

Japan	15	United States	67
Lithuania	1	Uruguay	4
Mexico	2		489

1.1 Attendee Breakdown

Of the 495 registered delegates there were 6 no shows to the congress due to Visa's not coming through, illness.

Student numbers were higher than expected with 25% of attendees being students.

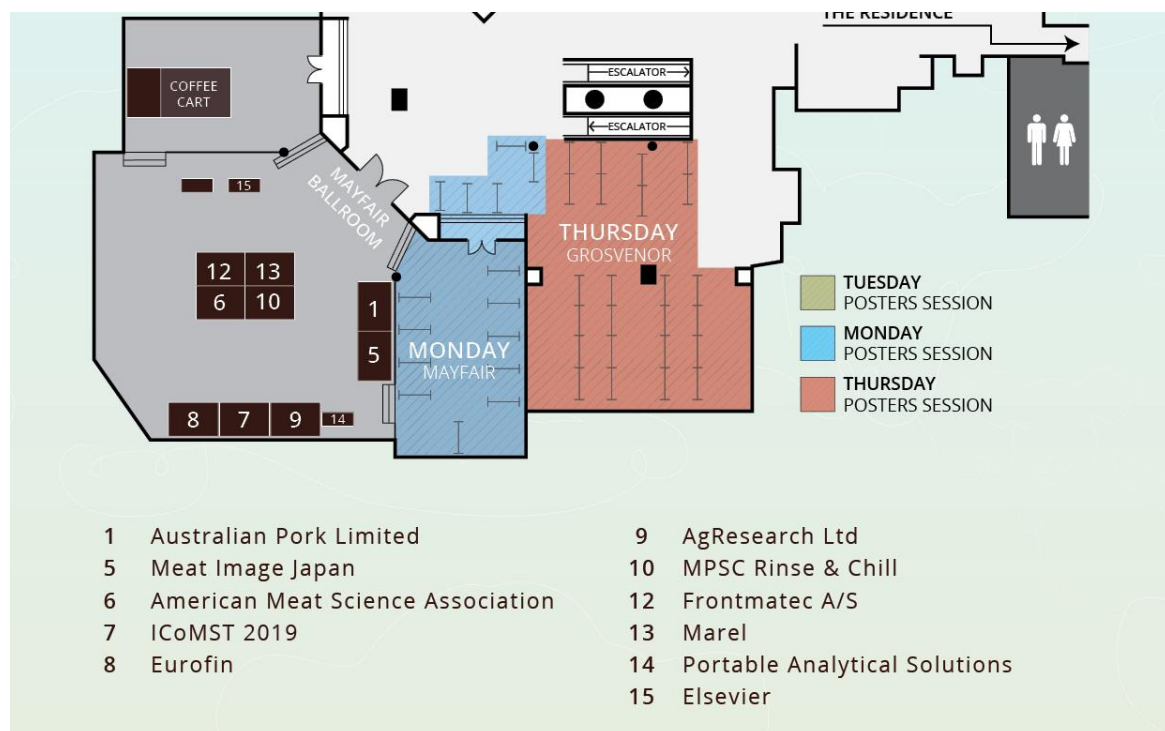
	Registered	No shows
Delegate	271	-3
Student	125	-2
Day Delegate	12	
Invited Speaker / Guest	23	
Sponsor/Exhibitor	35	-1
MSA Forum Invited Speaker	6	
MSA Forum Delegate Only	19	
Media	4	
	495	-6
Total attendees	489	

2. Social Overview

MSA Anniversary Celebration:

442 delegates and partners registered to attend

3. Exhibition



4. Evaluation Results

64th International Congress of Meat Science, held from the 12th – 17th August 2018, was attended by 489 delegates. Of these delegates, 140 completed event evaluation forms, equalling a 29% feedback rate.

Feedback received from speakers and delegates separate from the survey results include:

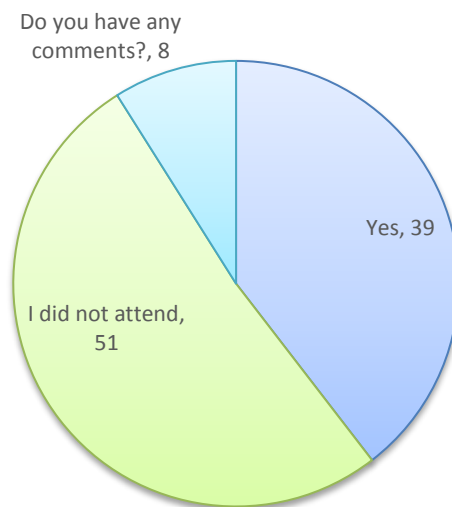
- *I enjoyed a lot in the congress and also in Melbourne. The travel was perfect and it has been a pleasure for me to attend the congress and visit Australia.*
- *well done! I had a fun time at icomst and thought you did a great job in its organisation and presenting a impressive and professional event.*
- *I really enjoyed the conference and Melbourne. I'd like to congratulate you and the others for an excellent conference very well organized. Well done!*
- *Thank you all for the nice preparation for the conference. I was enjoyed in this conference.*
- *Thanks so much for a wonderful meeting!!*
- *I had a great time at melb. and at ICoMST-2018. Thanks for all the help and cooperation you extended and all because of you and your team, I could attend a very informative and*

learning Congress. My sincere thanks and congrats to Prof. Robyn Warner for successful organisation of the Congress.

- *YRD did a great job in ICoMST organisation and presenting an impressive and professional event*

5. Feedback

Question 5: Did enjoy the MSA Forum on Monday?



Answer Choices	Responses	
Yes	39.55%	53
I did not attend	51.49%	69
Do you have any comments?	8.96%	12
Answered		134
Skipped		1

Comments:

- I preferred the Chr Hansen one
- Enjoyed what I attended. Only attended part as I did not want to miss the other sessions...concurrent sessions make it hard to choose.
- I partially attended. The methodology was not sufficiently described (how the grade is predicted ? equation ?)

- It was a bit redundant if you've ever heard this group of people speak before, but beats the alternative (for meat least), which was food safety. It was nice to have sessions running concurrently one day.
- I would have liked the panellists to discuss Meat Standards Australia on each of the animal types, what is currently being done about it.
- It was hard jumping between rooms as lots of good quality talks were on at the same time but it was a great idea to include it within the ICOMST program.
- Good cross-section of speakers from across the industry. Clear explanations about what MSA is doing and its impact. Good stories!
- Gave a good idea of what it was about: past, present and future. Was also refreshing to hear what farmers thought of it
- Very good arrangement indeed. EU can learn a lot from MSA.
- A bit disappointed that the two sessions ran in conjunction as I had to choose which talk to miss.

General view of the conference room



Forum speakers

