An alliance between:

2017 Graham Centre Beef forum
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Graham Centre Beef Forum
4 August 2017 - CSU Convention Centre, Wagga Wagga

8.30-8.55am  Registration and Coffee
8.55-9.00am  Welcome and outline of the day
Ms Toni Nugent (Industry Partnerships & Communications Manager, Graham Centre)
9.00-9.40am  Forward marketing agreements in the Australian beef industry
Angus Gidley-Baird (Rabobank)
9.40-10.00am 3d camera system for assessing live animals and carcasses
Edwina Toohey (NSW DPI)
10-10.20am  Advancements in MSA and how these apply to your beef business
Sarah Strachan (Meat and Livestock Australia)
10.20-10.40am Improving communication and building knowledge across the beef supply chain
Jasmine Nixon (Teys Australia)
10.40-11.10am MORNING TEA
11.10-11.30am Producer case study: Benefits of MSA and QA systems on-farm
Geoff Roberts (Wingelo Pastoral Company)
11.30-12.30pm Supplementary feeding to improve meat quality
• Optimising performance and welfare of weaning strategies
• The potential of canola meal as a supplement for grass-fed cattle
• Does beef from Holstein steers taste good?
Molly Vardanega, Emma Lynch and Veronika Vicic (Honours students, Charles Sturt University)
12.30-12.50pm Panel session (all speakers)
12.50-1.10pm Forum summary, wrap up and evaluation
Ms Toni Nugent (Industry Partnerships & Communications Manager, Graham Centre) & Mr Steve Exton (NSW DPI)
1.10pm LUNCH
Welcome to our 2017 Beef Forum

Our industry has again enjoyed a good year. Strong demand for Australian beef has seen prices remain high, and our product enjoys a strong reputation for quality in international markets. Recent significant investments by the industry in research and development will lead to work that will be important in securing future demand for Australian beef.

We operate in an increasingly competitive global market, which provides significant opportunities and challenges for the Australian beef industry. Angus Gidley-Baird will start our day, challenging us to think about what our industry will look like over the coming years.

There has been much talk of late on the potential for objective carcase measurement for the industry, but what is the potential for live animal assessment using 3D cameras? Edwina Toohey will provide an update on where this exciting work is at, and the potential it provides for the industry. Sarah Strachan will then update on recent advancements in Meat Standards Australia and the implications these have for beef businesses. Of course, while extra information and data is important, unless it is communicated across the supply chain its value is limited. Jasmine Nixon will speak on Teys approach to building knowledge across the supply chain and improving communication. Geoff Roberts will then round off this theme with his perspectives on the benefits of MSA and QA systems for his farm.

Future innovation in our industry will depend on the more youthful in our industry being encouraged and supported. We have bright and enthusiastic youth in our industry, and our final speakers (Molly, Emma and Veronika) will talk about the research they are undertaking in the beef industry as part of their final year of study.

We look forward to some robust discussion about some of the opportunities and challenges facing our beef industry.

Regards

Professor Michael Friend,
Director, Graham Centre for Agricultural Innovation
Speaker biographies

Mr Angus Gidley-Baird

Angus is a senior analyst, responsible for research and analysis on the local and global animal proteins sectors, with Rabobank’s Food and Agribusiness Research and Advisory team.

Angus formerly held roles at NSW Farmers Association, including policy director for Economics and Livestock, giving him a wide exposure to Australian farming operations and issues including policy development.

He holds an honours degree in Agricultural Economics from the University of Sydney, with majors in Agricultural Economics and Marketing. He also holds a masters in Accounting from Curtin University in Western Australia.

Ms Emma Lynch

After growing up on a sheep and cattle property just outside Bathurst, NSW, Emma started her undergraduate degree in Animal Science at Charles Sturt University in 2014. Emma is currently in her final year, and is conducting her honours project under the supervision of Michael Campbell, School of Animal and Veterinary Science and Dr Edward Clayton, NSW Department of Primary Industries. Emma’s honours project is supplementing grassfed beef with canola meal to determine live animal performance, carcass quality and omega-3 fatty acids. Her passion is in ruminate nutrition with a focus on meat quality. Emma hopes to expand her knowledge and continue to do more research in this area.

Ms Jasmine Nixon

Jasmine is a sixth generation producer on a commercial cow-calf operation in the southern tablelands of NSW. Jasmine was heavily involved in the Angus Youth program as a junior and also spent time working on large seed-stock operations in the United States that provided a strong background to pursue further study in agriculture. She completed a Bachelor of Livestock Science (1st Class Hons) at the University of New England before starting a quality assurance / quality control graduate position with Teys Australia. Jasmine has been a beef cattle judge at various Royal Shows and was The Land Sydney Royal Showgirl in 2012.

In her current role as Livestock Strategic Operations – Southern with Teys Australia, based at the Wagga beef processing plant, she provides producer support and has a strong research focus. Jasmine’s key research areas include data analysis around cattle performance and MSA compliance, as well as various other research projects. She has been involved in meat judging, assisting the Australian National Team on their US tour this year. Jasmine is also involved in a cattle seed-stock business with her fiancé Hayden, raising registered Limousin, Angus and Simmental cattle.

Mr Geoff Roberts

Geoff runs a self-replacing Murray Grey herd and self-replacing Bond sheep flock on his 16,000 hectare property ‘Wingelo’, south east of Wagga Wagga. The family also produces wool and lambs and grows dual-purpose crops including triticale and oats. Geoff sells the majority of his cattle direct to Teys in Wagga Wagga, aiming to turn off 320 kg carcasses to fit PCAS premiums, at the top of the pricing grid.

Ms Sarah Strachan

As Program Manager for Meat and Livestock Australia’s Meat Standards Australia (MSA) program, Sarah oversees the delivery and development of the MSA program to optimise the value of MSA to the supply chain. This includes business development and integrity programs that work with producers, processors, brand owners and end users, and a Research and Development portfolio that continues to enhance the MSA program. The MSA program works closely with 54 processors responsible for MSA grading over 3 million cattle and 5 million lambs annually supplied by over 45,000 sheep and cattle producers.

Sarah has a Rural Science qualification from the University of
New England and Graduate Certificate in Agribusiness through the University of Queensland. She has been employed with MLA and specifically the MSA program for 15 years. During this time Sarah has been involved in providing grading services, delivering and development of MSA training programs and communication of MSA tools and resources including producer feedback systems.

**Ms Edwina Toohey**

Edwina is a NSW Department of Primary Industries Beef Development Officer based in Dubbo. She joined NSW DPI in 2003 as a Research Officer (Meat Science) after completing her Bachelor of Applied Science (Agriculture) (Hons) degree at Charles Sturt University, Wagga Wagga. Edwina’s honours project was part of a larger NSW DPI and Beef CRC project that looked at the genotype and growth rate effects on meat quality of feedlot finished beef carcases.

Edwina has experience in both cattle and sheep research and has authored 55 scientific papers/reports. In CRC1 Edwina was the key researcher in the validation and optimisation of new generation electrical technologies across Australia, with this work extended to the goat industry. Her expertise and industry credibility was important to address the performance of electrical stimulation units being used at the abattoirs and the development of electrical stimulation training manuals for processors.

Edwina has also undertaken research on methods to alleviate dehydration in sheep under lairage conditions and worked on the SmartShape™/SmartStretch™ technology in beef and sheep meat, fully funded by MLA. Associated with this work Edwina completed her Master’s degree through the University of New England. Edwina’s focus more recently has been on carcase measurement technologies, recently investigating the value of online objective measurement technologies to the red meat processing industry.

**Ms Molly Vardanega**

Molly grew up on a mixed farming enterprise in Orange, NSW and has been involved in the production of cherries, lucerne and livestock her entire life. Molly spent time studying the local beef industry including research facilities and their roles in the domestic industry, as well as spending time in Indonesia studying beef industry practices, breeding importation and abattoir operations.

Molly is in her honours year of a Bachelor of Animal Science, Charles Sturt University, Wagga Wagga. Her honours research project focuses on the weaning of beef calves and the way the different methods employed can impact both the animals and enterprise. Molly has a keen interest in furthering the beef cattle industry in Australia and helping producers get the most out of their production models. Molly hopes to further this interest after graduation and secure a job within the industry.

**Ms Veronika Vicic**

Veronika is in her fourth year of a Bachelor of Animal Science, Charles Sturt University, Wagga Wagga. She is undertaking an honours project researching the eating quality of Holstein beef. Veronika decided to study animal science as she wanted to increase her awareness and knowledge of the food supply chain. Growing up and living in Sydney for the majority of her life, Veronika was not exposed to the Australian agriculture industry. Veronika wanted to become a part of an industry that had high value in society and possibly one day become a primary producer. Now in her final year of university, Veronika hopes to be able to use the knowledge and skills she has gained from her degree to be innovative, helping the industry maintain high standards and keeping up with the continual shift in market products that consumers are demanding. Veronika is also very passionate about bridging the urban-rural divide and connecting individuals in cities to the farm gate.
Forward marketing agreements in the Australian beef industry – time to put them on the table

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Take home messages:
• Producers need to approach the purchase and sale of livestock in a more sustainable way, making judgments on costs and margins, rather than hoping to get the best price on the day
• Forward marketing agreements refer to agreements between parties with vested interests in the supply chain for the delivery of a physical product at an agreed volume and/or price at some time in the future
• Forward marketing agreements are a marketing tool to be used in conjunction with other measures. They will not suit all operators in all situations.

The Australian beef industry has recently seen significant change, from record production to record cattle prices. Continuing volatility, along with increasing global competition in beef markets, large capital investments in supply chains, product reputations, and pressures for safe, reliable supply, means the need to plan for, and manage, price and volume variability becomes increasingly important. This is even more critical in 2017, as cattle producers are making investment decisions to rebuild herds in a high-priced cattle market.

To date, the use of forward contracts in the Australian beef industry has been very limited. But with a number of changes in the industry and the risk of ongoing volatility, now is the time to consider the use of forward contracts. Producers in particular, need to consider the use of forward marketing agreements to help manage some of the price risk, but also as a more general tool that will assist in better business management and the promotion of a more sustainable business environment.

Other members of the supply chain, from processors to retailers, can also benefit from forward marketing agreements, whether through management of price and volume risk or increased collaboration along the supply chain, which can assist in product development. It just requires a commitment from the two parties to make it happen.

A tool to better manage business

The value of forward marketing agreements is more certainty, not to beat the market at pricing. With an accurate knowledge of production costs, along with a reasonable understanding of the market and future price movements, forward marketing agreements allow parties to agree on a price they believe will be fair at a future point in time. Provided a seller is receiving more than the cost of production and the buyer is not being priced out of the market, the agreement should be satisfactory to each party and provide an ongoing sustainable business agreement.

Aside from the increased certainty, forward agreements provide additional benefits. With a greater understanding of production costs, a requirement for effective forward marketing, and more secure revenue streams, producers can undertake more objective planning to improve production efficiencies and investments. Processors can benefit from forward contracts, with greater management of supply, input quality control, improved efficiency, and improved ability to respond to customer preferences.

Work to make agreements more commonplace

To increase the use of forward marketing agreements across the beef supply chain, a degree of mature coordination and cooperation is needed. Parties must give consideration for their own and the other party's position. A forward agreement is a partnership in which both parties need to share the risks in order to get a better outcome. Critical to the integrity of a contract is each party’s commitment to honouring the agreement, thereby reducing the risk of default or counterparty risk.

Producers

A change in approach to marketing cattle is needed. Clear knowledge of production costs is required to have a discussion about forward prices. Knowledge about costs allows prices to be negotiated around sustainable margins, rather than using them to try and beat a market driven by supply and demand.

Processors

There is a need for ongoing development of new technologies in order to improve the objectivity and accuracy of measurements that provide producers with usable information to inform their production process and produce the desired product. Communicating information in a usable form that can be measured historically would allow producers to refine management, feeding, and breeding, so as to meet required market specifications.
Conclusion

Use of forward agreements in the cattle industry to date has been limited, but there is no prohibitive reason why forward agreements should not be more heavily used in the cattle industry, particularly in transactions that involve producers. Now, given the ongoing volatility, the development of branding and product marketing traits, and developments in the industry, including objective assessments and reporting, the platform and rationale exists for the increased use of forward agreements.

A change of mind-set is required. Producers need to approach the purchase and sale of livestock in a more sustainable way, making judgments on costs and margins, rather than hoping to get the best price on the day. Furthermore, across the whole supply chain, there is a need to show leadership and promote a more collaborative approach that can help minimise volatility, develop specific products, and provide security of supply. Such ability supports all members of the supply chain, and will assist in the global marketing of Australian beef and competition with other key beef-producing nations.

Defining forward marketing agreements

In this paper, ‘forward marketing agreements’ is used as a collective term, referring to agreements between parties with vested interests in the supply chain for the delivery of a physical product at an agreed volume and / or price at some time in the future. They could include one-off specific contracts or ongoing agreements, but they do not include futures and other derivative products.

Retailers

Given the need to manage volatility at the consumer end of the supply chain, retailers also need to participate in forward agreements. Without retailer participation, processors carry a larger component of the risk. Back-to-back contracting, whereby processors line up the supply with the demand and offset the forward position with the producer by creating a forward position with a buyer, creates a neutral position for the processor.

In the marketing of specialised products, maturity and leadership are required, starting at the retail level that support commitment and collaboration all the way up the supply chain. This will allow the development and delivery of the defined quality and quantity of supply.

Industry

Given that forward agreements are relatively unused in the cattle industry, and the perception may arise over market and legal power in forming agreements, consideration should be given to the development of industry standards. In the Australian grains industry, Grain Trade Australia is established as the national body to develop template contracts, providing standard terms and conditions for the trade of grain within Australia. They also facilitate a dispute resolution process.

The need to use selectively

As with all marketing tools, consideration needs to be given as to how they support and assist individual business structures, and they need to be deployed responsibly. Forward marketing agreements should be considered as a marketing tool to be used in conjunction with other measures, and they will not necessarily be suitable for all operators in all situations.

Given that a strong understanding of costs is needed, together with a longer time period horizon, we expect more progressive farmers to have a better opportunity to tap into forward agreements. Furthermore, given the lack of adoption at the producer level to date, this will require proactivity and leadership in order to initiate such agreements.
3D camera system for assessing live animals and carcasses

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Take home messages:
• BeefSpecs tools have the potential to improve market compliance rates worth $50 million per year to the beef industry
• A real-time 3D systems to assess P8 fat has the potential to enhance the marketing of beef cattle
• The use of a 3D camera system on live cattle to assess P8 fat and muscle score demonstrates the importance of capturing curvature as a form of representing body shape.

Live animal assessments

The BeefSpecs fat calculator (http://beefspecs.agriculture.nsw.gov.au/) and the BeefSpecs drafting tool (Walmsley et al., 2014; http://beefspecs.agriculture.nsw.gov.au/drafting) have been developed to assist producers more accurately meet market specifications (P8 fat (millimetres) and carcase weight (kilograms)). This work began in the phenotypic prediction program of the Cooperative Research Centre (CRC) for Beef Genetic Technologies. It has been identified that if producers improve market compliance rates (i.e. improve meeting market specifications), it is worth over $50 million per year to the beef industry.

A key input into the BeefSpecs tools is the initial P8 fat. The results of a sensitivity analysis of initial P8 fat found it was sensitive (McPhee et al., 2014), and the development of a real-time system to assess P8 fat was considered an important industry issue. A real-time, on-farm system for assessing live cattle also reduces variability between assessors and plays an important role in generating data that will assist the industry make management decisions early in an animals’ life that will impact profitability. This technology will also assist the industry and enhance the marketing of beef cattle (McPhee et al., 2017).

A working relationship with the Centre for Autonomous Systems at the University of Technology, Sydney (UTS) was forged in 2009 with assistance from Dr John Wilkins from the New South Wales Department of Primary Industries (NSW DPI), who had made contact with UTS when conducting research using laser technology (Wilkins et al., 2015). The collaboration has grown between NSW DPI, UTS, and Meat and Livestock Australia (MLA) to conduct a ‘proof of concept’ using 3D cameras to assess P8 fat and muscle score. The ‘proof of concept’ project uses off-the-shelf Red Green Blue-Depth (RGB-D) Microsoft Kinect cameras to objectively assess P8 rump fat (P8 fat (mm)) and muscle score (MS) traits in Angus cows and steers. It found there was a positive correlation between estimating hip height (centimeters) between the visually measured and the assessed 3D data from RGB-D cameras on cows and steers. The results demonstrated the importance of capturing curvature as a form of representing body shape (McPhee et al., 2017).

Setting research priorities

Estimating lean meat yield in beef and sheep carcasses has been built on the success of using a 3D camera system to assess P8 fat and muscle score on live animals. The project has been undertaken because if the 3D cameras can accurately estimate lean meat yield, this technology will be a cheaper alternative to the DEXA technology. The end goal is a lean meat yield estimate that will be reported back to producers. This project will determine the best camera position for estimating lean meat yield in lamb carcasses; develop and validate the machine learning of 3D images of lamb carcasses to estimate lean meat yield; benchmark prediction accuracy in commercial processing conditions against computer tomography (CT) (lamb) and commercial bone out (beef); and deliver prototype devices to estimate traits of carcasses.
Advancements in MSA and how these apply to your beef business

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Take home messages:
• MSA has achieved significant adoption within the Australian beef industry
• Each carcase that meets MSA minimum requirements is given an MSA index to represent the potential eating quality of that animal
• The MSA Index is influenced by on-farm and production decisions
• MSA producers can access MSA index scores and benchmarking tools in myMSA to identify opportunities to enhance eating quality
• Research of on-farm technologies aim to help producers better meet MSA and customer specifications

Meeting consumer expectations for beef eating quality

To ensure consumers always end up with beef that meets their expectations Meat Standards Australia (MSA) was developed by the Australian red meat industry. Opened to the beef industry in 1998, the program is based on almost 700,000 consumer taste tests by over 100,000 consumers from nine countries, and takes into account all factors that affect eating quality from paddock to plate.

How does MSA work?

For cattle to be MSA eligible, they must be consigned from an MSA registered property. Beef producers wishing to register can do so online at www.mla.com.au/msa. MSA cattle can be supplied directly to a processor or at a saleyard.

Each carcase presented for MSA grading is assessed by an MSA accredited grader at one of the 43 MSA licensed beef processing plants across Australia. Graders assess a number of traits that have been scientifically proven to affect eating quality including ossification, marbling, ultimate pH, subcutaneous rib fat thickness, hump height and hot standard carcase weight. Other factors included in the MSA grading model are declared by the producer and verified by the processing plant: hormonal growth promotant status, milk-fed vealer category, saleyard status and tropical breed content.

With these measurements, the eating quality of all cuts in the carcase is predicted for eight different cooking methods.
Adoption of MSA

In 2015 - 16 there were 3.1 million cattle MSA graded, representing 38 percent of the Australian adult cattle slaughter through 43 processors. This is an increase of 4% on the previous financial year (Figure 1). There are now over 48,000 producers registered and eligible to supply cattle into the MSA program.

Figure 1. MSA beef grading adoption.

The more MSA product available on supermarket or butcher shelves, the more that product will meet consumer expectations, every time in Australian and overseas.

In 2015 - 16, the average price differential for MSA young non-feedlot cattle across all weight ranges was $0.24/kg. Based on the average carcase weight of MSA cattle in 2015 - 16, MSA beef producers potentially received an additional $66 per head for young non-feedlot cattle and $45/hd for cattle that met the grainfed specifications, totalling an estimated $153 million delivered back to the farm gate.

Australian brand owners are increasingly using MSA grades (three, four and five star product) to inform their brand lines and help consumers identify premium product.

Release of the MSA Index

Each carcase that meets MSA minimum requirements is given an MSA index that is available to producers to represent the potential eating quality of that animal.

The MSA Index is a single number and standard national measure of the predicted eating quality potential of a carcase. The MSA Index is a number between 30 to 80, expressed to two decimal places (i.e. 54.62), to represent the eating quality potential of a whole carcase. The higher the MSA index, the higher the potential eating quality.

The MSA Index is independent of any processing inputs and is calculated using only attributes influenced by pre-slaughter production. It reflects the impact on eating quality of management, environmental and genetic differences between cattle at the point of slaughter. It is a consistent benchmark that can be used across all processors, geographic regions and over time.

Registered producers can access all their MSA grading results including the MSA Index values at www.mysma.com.au.
The key factors impacting on eating quality and that will have the biggest influence on MSA index performance are shown as attributes having ‘Very high’ or ‘High’ importance (Table 1). Understanding the specific carcase attributes that determine the MSA Index, allows producers to consider what production areas to target in order to improve their performance.

Table 1. The effect of carcase attributes on the MSA Index.

<table>
<thead>
<tr>
<th>Carcase input</th>
<th>Size of effect on the MSA Index (units)</th>
<th>Classification of effect</th>
<th>Relative importance of these traits in changing the MSA Index*</th>
</tr>
</thead>
<tbody>
<tr>
<td>HGP status</td>
<td>5</td>
<td>The MSA Index of carcases with no HGP implant is around 5 index units higher</td>
<td>Very High</td>
</tr>
<tr>
<td>Milk-fed vealer</td>
<td>4</td>
<td>The MSA Index of milk fed vealer carcases is around 4 index units higher</td>
<td>Very High</td>
</tr>
<tr>
<td>Saleyard</td>
<td>5</td>
<td>Carcases which were consigned directly to slaughter and NOT processed through a saleyard have an MSA Index around 5 index units higher</td>
<td>Very High</td>
</tr>
<tr>
<td>MSA marbling</td>
<td>0.15</td>
<td>As MSA marbling score increases by 10, the MSA Index increases by around 0.15 index units</td>
<td>High</td>
</tr>
<tr>
<td>Hump height</td>
<td>-0.7</td>
<td>As hump height increases by 10mm, the MSA Index decreases by around 0.7 units in carcases which have no TBC, hump height has no impact on MSA Index</td>
<td>High</td>
</tr>
<tr>
<td>Tropical Breed Content (TBC)**</td>
<td>0% = 0</td>
<td>As declared TBC content increases from 0 to 100%, the MSA Index decreases by up to 6.3 units</td>
<td>High</td>
</tr>
<tr>
<td>Ossification score</td>
<td>0.6</td>
<td>As ossification score decreases by 10, the MSA Index increases by 0.6 index units</td>
<td>High</td>
</tr>
<tr>
<td>Rib fat</td>
<td>0.1</td>
<td>As rib fat increases by 1 mm, the MSA Index increases by 0.1 index units</td>
<td>Medium</td>
</tr>
<tr>
<td>Hot standard carcase weight (HSCW)</td>
<td>0.01</td>
<td>As HSCW increases by 1kg, the MSA Index increases by &lt;0.01 index units</td>
<td>Low</td>
</tr>
<tr>
<td>Sex</td>
<td>0.3</td>
<td>With low ossification values, females have a higher index value than steers by around 0.3 index units</td>
<td>Low</td>
</tr>
</tbody>
</table>

The values presented in Table 1 are the average effect calculated for 2.8 million carcases across all states of Australia.

* Relative importance indicates the size of effect changing that trait will have on the MSA Index within a herd, if all other traits remained the same. Some traits may have a large impact but are difficult for a producer to alter.

** Hump height can be used in conjunction with carcase weight as the determinant or verification of TBC during grading.

The average MSA index for 2015 - 16 for MSA carcases graded throughout Australia, and that met MSA minimum requirements, was 57.52. The average MSA index for grassfed and grainfed cattle was 58.50 and 56.66 respectively.

An MSA Index percentile band provides an indication of an individual’s average MSA index performance relative to the performance of others. Table 2 provides the MSA index percentile bands of all MSA carcases in Australia in 2015 - 16. The table allows you to benchmark index performance to the current range in the industry.

Table 2. MSA Index percentile bands.

<table>
<thead>
<tr>
<th>Band</th>
<th>National Index</th>
<th>Grain fed Index</th>
<th>Grassfed Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top 1%</td>
<td>66.07</td>
<td>65.70</td>
<td>66.58</td>
</tr>
<tr>
<td>Top 5%</td>
<td>63.72</td>
<td>63.55</td>
<td>63.89</td>
</tr>
<tr>
<td>Top 10%</td>
<td>62.55</td>
<td>62.22</td>
<td>62.79</td>
</tr>
<tr>
<td>Top 25%</td>
<td>60.59</td>
<td>59.55</td>
<td>61.16</td>
</tr>
<tr>
<td>Top 50%</td>
<td>57.78</td>
<td>56.56</td>
<td>58.15</td>
</tr>
<tr>
<td>Bottom 25%</td>
<td>54.97</td>
<td>54.21</td>
<td>56.24</td>
</tr>
<tr>
<td>Bottom 10%</td>
<td>51.13</td>
<td>51.17</td>
<td>53.41</td>
</tr>
<tr>
<td>Bottom 5%</td>
<td>49.53</td>
<td>48.77</td>
<td>51.01</td>
</tr>
<tr>
<td>Bottom 1%</td>
<td>46.32</td>
<td>46.10</td>
<td>46.79</td>
</tr>
</tbody>
</table>
Benchmarking your own performance

The ability to benchmark your cattle’s performance against other producers in the country is now at the fingertips of MSA producers in the myMSA feedback system.

MSA benchmarking allows producers to benchmark their cattle’s compliance and Index results against that of others in their region, state and across the country. This can be considered a ‘health check’ for producers who in the past had only received feedback about their own performance. It will allow producers to contextualise their grading data and identify if they are matching, lagging or exceeding industry averages.

With considerable variation in feed and cattle types across Australia, the ability to benchmark against regions and similar cattle types, will allow more meaningful comparisons. In the event that a consignment has a high level of non-compliance, producers will be able to see if it was an individual problem or a broader area issue.

This work is an extension of the inaugural 2015 Australian Beef Eating Quality Audit and is based on MSA grading results for more than 3.2 million cattle from the 2014 - 15 financial year.

Registered producers can access benchmarking through myMSA or their linked myMLA account.

MSA in 2020

The MSA program is based on almost two decades of research, spanning nine countries. Every aspect of MSA is supported by sound science, and regularly reviewed. If an aspect is scientifically proven not to affect eating quality, it is not included in the MSA grading system.

The vision to 2020 is focused on ensuring all cattle in Australia will be eligible for MSA grading and to have their eating quality accurately described. Whilst MSA is a voluntary grading program, sights are set on MSA grading over 50% of the national cattle slaughter by 2020.

The demonstrated outcomes of the MSA program and return on investment to producers are proof the program has been successful, but there is still room for improvement. This includes conducting research that identifies on-farm practices and tools that help producers increase the eating quality of their cattle and improve compliance to both MSA and company specifications.

As MSA moves from delivering domestic eating quality solutions to globally focussed outcomes, it will seek to enhance the characteristics of the trusted MSA quality mark, which is the authoritative symbol that underpins the eating quality of beef brands. The MSA program will always remain underpinned by world leading science.

The plan features ongoing investment in research, as well as a focus on continued improvement of MSA’s integrity systems, and more efficient, accurate and transparent grading through development and adoption of objective carcase measurement technologies.
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Benefits of Meat Standards Australia (MSA) and Quality Assurance (QA) systems on-farm

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Take home messages:
• Make use of feedback on carcase performance to improve how cattle are prepared and presented and to make better decisions about future sales
• Implement quality assurance, record keeping and identification systems on-farm to get the most out of your production system.

The business
Geoff, Gaye and Tim Roberts run a self-replacing Murray Grey herd and self-replacing Bond sheep flock on their 16,000 hectare property ‘Wingelo’, south east of Wagga Wagga. They also produce wool and lambs and grow dual-purpose crops including triticale and oats.

The property has a mix of red loam, clay, granite and shale soils with low pH and high aluminium. Lime is spread at two to five tonnes per hectare and single superphosphate at 125 to 200 kilograms per hectare.

The property has been fenced to a plan with laneways for ease of stock movement.

Pastures consist of cocksfoot, phalaris, fescue, perennial ryegrass, sub-clover, and white and strawberry lucerne. Dual-purpose crops of oats and triticale also help to fill the winter feed gap. The lucerne, along with oats and vetch and rye and clover allows for silage and hay production.

Making the most of silage
The first cut of lucerne gives the best results for silage and careful management makes the most of the product. The lucerne is cut at midday when the plant sugars are up and when the ground and plant is sufficiently dry. It is pressed into large square bales and transported into pits within an hour, then covered in plastic and sealed with earth. This is fed out during autumn and winter and when weaning calves.

Cattle production
Cattle need good clean water, shade and shelter for good production. The Wingelo herd is based on Murray Greys and are selected on temperament. Fertility is a key performance indicator and all females are pregnancy tested and must have live calves at marking. The Roberts’ aim for heifers to calve at 23 months and if they do not have a calf every year they are culled. Cows are not joined after their fifth calf.

At calf marking everything is given the station earmark, females also get an age mark and male calves are castrated with two rings.

Identification is important
Male calves are identified with an NLIS and a management tag, while female calves are identified with an NLIS tag and a front and back management tag. All tags are year coloured and numbered in sync with the NLIS tags. Heifer calves are also tagged according to the mothers age, so the oldest mob, those that are from the cows on the fifth calves, start at number 1, followed by forth, third, second and heifer calves. Male calves are tagged from youngest to oldest.

Weaning
Calves are fed silage while they are still on their mothers. The Roberts’ yard wean and feed silage, then move them into a small holder paddock before moving into larger paddocks when they all come to the feed.

Targeted marketing
Wingelo sells direct to feedlots or abattoirs under Meat Standards Australia (MSA) and Pasture fed Cattle Assurance System (PCAS), or to the saleyards. Most of their cattle go direct to Teys in Wagga Wagga and they aim to turn off 320 kg carcasses to fit PCAS premiums, at the top of the pricing grid.

Carcase feedback is sought to give an indication of how carcases perform compared to liveweight assessment. This information is used to improve future sales and inform decisions about bull selection, preparation and presentation of weaner cattle, yearlings and bullocks, and how to make the most out of cull females and older cows.
Weaning your calves: less stress for greater gain

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Take home messages:
- Poorly weaned calves can have serious and sometimes lasting effects on production both for the cow and calf
- Inappropriate weaning can adversely affect economic gain
- Depending on management, the weaning method used by a beef enterprise needs to be adapted to suit individual enterprises.

The weaning of young mammals is inevitable in every species. It involves the transition of the young establishing independence and no longer relying on a dam for a nutrition source. Weaning tends to be a source of great controversy when it comes to deciding which method is best, and there are many different theories on which is the most efficient.

The three most commonly studied methods are yard weaning, fences-line weaning and the use of an anti-suckling device on the calf or a nose-flap (Figure 1). Alternative methods to the traditional abrupt weaning practice have been researched and developed in an attempt to reduce stress and improve performance on the beef herd (Boland, Scaglia, Swecker and Burke, 2008). Weary, Jasper and Hötzel (2008) suggest that while there are many factors that negatively affect animals at weaning the combining of these factors at weaning accentuates the negative responses producers may see.

Figure 1. Calf with easy wean nose-flap applied.

Source: Easy Wean, 2015.

The abrupt and permanent weaning of offspring can give rise to a number of negative behaviours such as an increase in vocalisation, pacing/increased walking, decreased eating/drinking, weight loss and an increase in aggression towards other herd members (Newberry and Swanson, 2008). The most obvious stressor producers may think about is the calf’s need to adapt to a new or changed diet. In addition to this, there is also the young’s exposure to a new environment, new social interactions, new herd structure and the loss of maternal contact (Newberry and Swanson, 2008).

Weaning methods have also been shown to alter behaviour, sometimes for a long period of time, and negatively affect health and immunity (Latham and Mason, 2007). It is not only the calf that is affected by weaning, as the dam can also be affected by the stress of losing her young and the discomfort of a swollen udder. The effects that weaning can have are not only unfavourable for the animals but also for the producer in terms of economic gain with liveweight losses often common.

Molly’s current research focusses on which weaning method; yard, fence line or nose-ring weaning, has the greatest impact on behaviour and weight gain / loss of the calf. The research aims to determine which weaning method is more beneficial to the animal in terms of welfare and production, as well as how to improve on these methods to maximise benefits for the enterprise and animals.

At the time of printing, raw data from this experiment shows that at initial weighing, seven days after weaning methods have been applied, calf weight gain is highest in yard weaned, followed by fence line and nose-flap weaning. After 60 days’ the weight gain in calves was highest for nose-flap, followed by fence line and yard weaned.

At time of printing, the 120 day weights from the groups were not available. Although this data has not yet been analysed and final weights have not been seen, it is evident that for producers looking to sell calves immediately after weaning, yard weaning may be the best method for weight gain. If producers are wanting to keep calves to sell at a later date, the use of nose-flaps may be more appropriate.

References


Supplementing grassfed beef with canola meal to determine live animal performance, carcase quality and omega-3 fatty acids

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Take home messages:
- Canola meal is readily available at Riverina Oils and BioEnergy, Wagga
- Canola meal is currently a similar price to traditional grain pellets and is Pasture Fed Assurance System accredited
- Grassfed beef may have human health benefits.

Demand for grassfed beef – looking outside Australia

There is increasing consumer demand for grassfed beef throughout the year in Australia, but pasture variation is the determining factor (McLennan et al., 2016). Pasture based beef production systems have relatively low inputs in southern beef enterprises. Over recent years there has been an increasing demand for grassfed beef that comply with the Pasture Fed Assurance System (PCAS). As pasture growth and quality is variable throughout the year, it has become problematic, to maintain a consistent supply of cattle that meet these standards. The aim of this project is to investigate the effects of supplementing grassfed beef with canola meal to determine the live animal’s performance and carcase quality.

Australia’s red meat production far exceeds domestic consumption, making Australia one of the largest exporters of red meat globally. In 2015 - 16, Australia exported 74 percent of total production, and of that, 28.6% was exported to the United States (MLA, 2016). The constant supply to the US is critical for the Australian economy, as they are our largest importer, with 96% being grassfed beef (MLA, 2016). So, if producers can find a supplement that is readily available and PCAS eligible, they can change from traditional finishing methods to approved supplements, attracting a premium and supplying cattle all year round.

Canola meal and human health benefits

Canola meal is a typical source of protein that is used extensively in the dairy, swine and poultry industries. Riverina Oils and BioEnergy (ROBE) is an oilseed crushing and refining facility that is certified as non-GM canola, and is located at Wagga. The canola meal used in the project is a by-product from the oil refining process. Unlike traditional grain based diets, the inclusion rates for canola meal does not pose a great health risk (acidosis), but it does have the potential to change fat colour and possibly meat quality. Protein meals are commonly used throughout the dairy industry, along with other meals (PCAS accredited) including soybean and cottonseed meal. The properties of canola meal include a high percentage of crude protein and an excellent amino acid profile, which is currently the same price as pellets (Table 1).

Table 1. Comparison of Canola meal and pellets used throughout the trial.

<table>
<thead>
<tr>
<th></th>
<th>DM (%)</th>
<th>ME (MJ/kg DM)</th>
<th>CP (%)</th>
<th>NDF (%)</th>
<th>ADF (%)</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canola meal</td>
<td>90</td>
<td>11.9</td>
<td>37.7</td>
<td>32</td>
<td>21</td>
<td>$345</td>
</tr>
<tr>
<td>Pellets</td>
<td>93.1</td>
<td>11.9</td>
<td>20.1</td>
<td>31</td>
<td>11</td>
<td>$345</td>
</tr>
</tbody>
</table>
The study

A total of 40 Angus and Angus cross animals were randomly stratified into treatment groups and placed in the Charles Sturt University (CSU) feedlot for 60 days. On arrival, the steers were backgrounded for two and a half weeks before the trial commenced. The average induction weight was 474 kg. Steers were randomly assigned to two treatment groups; (1) pellets and hay and (2) canola meal and hay. Hay was fed ad libium and the supplements were fed at an inclusion rate of 2.5 kg / head / day for pellets and 2 kg / head / day for canola meal, and were equally balanced for energy (13 MJ ME / kg DM). At Day 30, the canola meal was increased to 2.5 kg / head / day. Each treatment group had four replicates, with each pen having five animals. Steers were fed their ration of hay and supplement in the morning and fed hay again in the afternoon.

All steers were weighed every 14 days to compare growth weights and blood samples were taken on days 1, 14, 28 and 56. The blood samples were used to determine if there was an increase in omega-3 in the blood. All steers were processed at Teys Wagga Wagga, with Meat Standards Australia reports and all striploins collected. Carcase measurements including carcase weight, meat colour, fat colour and pH were taken.

What do the results mean for producers?

The results from the trial will provide reputable information to producers and processors about the effects on feeding canola meal as a supplement. That is, producers can feed a high quality silage / forage in addition to a PCAS accredited supplement, for a short period of time before slaughter, to maximise the carcase performance. In turn, this could provide a more even supply of grassfed beef throughout the year. These cattle could be sold as PCAS accredited beef, receive premiums and open doors to the export market of premium grassfed beef, particularly in the US.

Reference


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An investigation into the performance and eating quality of Holstein steers

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Take home messages:
• Commercial feedlot data shows that Holstein steers consume a lower dry matter intake and can exceed the performance and grading of traditional beef breeds raised under similar conditions, but their dressing percentage is generally lower than traditional beef breeds
• There is limited information in regards to the eating quality of Holstein beef but it is commonly known that Holstein meat has higher marbling
• This trial will provide comparative baseline data for the production of Holstein cattle versus British bred cattle finished on a common diet.

Introduction
Animal welfare concerns surround the Australian dairy industry. The majority of these topical issues relate to the treatment of male calves, particularly those euthanised at birth. The Australian dairy industry slaughters over 500,000 calves per year, which accounts for 6.8 percent of the beef industry on a per head basis. Commonly these calves are marketed as veal with carcasses that range between 50 – 150 kilograms, but veal carcasses are so light they only account for 1.3% of Australia’s total meat production on a per kg basis each year (MLA, 2017).

Australia has many export markets for beef and veal products. The largest importing countries of Australian beef and veal are the United States (US), Japan, Korea and China (ABARES, 2016). Within these markets, beef consumption is forecast to rise by 15% in next 10 years. The largest contributor to this rise is predicted to be China, currently Australia’s fourth largest importer (MLA, 2016).

Holstein versus British breeds
The term bobby calf is widely accepted in Australia for male calves most commonly culled at less than 10 days of age from a dairy herd. These calves are regarded as a low value by-product of the dairy industry (Cave, Callinan and Woonton, 2005).

Pre-slaughter transport is a key bobby calf welfare issue. There are many factors that can influence the physiological stress experienced by calves during transportation including age, stocking densities on trucks, transportation flooring and distance of transportation to an abattoir (Jongman and Butler, 2014). Through establishing a market for Holstein beef, the welfare issues associated with bobby calves can be minimised.

Mulley et al., (2014) suggests that dairy influenced steers can produce equal or greater meat quality compared to traditional beef bred cattle. If producers can grow out bobby calves knowing they can achieve a high quality carcase and gain optimal prices for their product, this may provide some incentive to change current practices that occur within the dairy industry.

Commercial feedlot data shows that Holstein steers consume a lower dry matter intake and can exceed the performance and grading of traditional beef breeds raised under similar conditions (Rust and Abney, 2005), but the dressing percentage for Holstein cattle is generally lower than traditional beef breeds (Buege, 1988). The muscle shape of Holstein steers also varies from that of traditional beef breeds, and can be problematic for commercialised businesses in the hospitality sector that have specific criteria for meat cuts (Buege, 1988).

In the US, Holstein steers account for a significant proportion of the national US beef supply, with meat generally used in ground beef products (NASS, 2005). It is common practice for Holstein calves to be placed in calf rearing facilities and fed concentrate feedstuffs for the duration of production (Keane and Allen, 2002). Keane and Allen (2002) found that feeding Holsteins high concentrate diets compared to low concentrate diets did not influence changes to any carcase traits, but high concentrate diets improved carcase weight and conformation. This suggests that growing Holstein steers on a low energy diet could be a viable option for producers. It would increase the economic viability of raising Holstein calves in Australia and make it easier for producers to integrate this practice into current farming systems.

Eating value of Holsteins
There is limited information in regards to the eating quality of Holstein beef but it is commonly known that Holstein meat has higher marbling. Armbruster et al., (1983) concluded in their eating quality trial that higher levels of marbling was associated with an increase in tenderness. However this relationship does not guarantee improved eating quality.

Due to the lack of information surrounding consumer opinion and preference on Holstein beef, the production of dairy beef needs to be further investigated to evaluate the potential of a viable dairy beef chain within Australia. This trial will provide comparative baseline data for the production of Holstein cattle versus British bred cattle finished on a common diet. It will assist in determining which cattle breeds produce superior eating quality.

If the consumer sensory trials show there is a preference for meat produced by Holstein steers, this could be an opportunity for Australian dairy farmers to expand and integrate their enterprise into the beef market.
Pilot study

A total of 15 Holstein steers and 15 British steers are included in the pilot trial. The steers are being run on a local farm at Wagga Wagga. They are running in a paddock with limited pasture availability, and are fed a variable mixed ration on a weekly basis. The concentrate feed was initially available to steers in May 2017 and will be fed until slaughter in August 2017.

All steers will be processed at Teys, Wagga Wagga. Teys will provide Meat Standards Australia (MSA) reports and AUS-MEAT data associated with each steer, inclusive of meat and fat colour, pH, intramuscular fat (IMF), eye muscle area, rib fat and dressing percentages for each carcase. Measurements will be graded according to the MSA protocols. The carcase data provided by Teys will be used to make a comparative analysis of the performance of Holstein and British bred steers finished on a common diet.

Striploins from each carcase will be collected and tenderness measured using a Warner-Bratzler shear force instrument.

The striploins will also be used for consumer sensory trials. For sensory evaluation, 100 random untrained consumers will be recruited to evaluate the tenderness, juiciness and flavor of meat according to the MSA sensory testing protocols described by Watson et al., (2008). Consumer scores will be evaluated to establish how Holstein beef compares to traditional British bred beef.

Conclusion

As previously mentioned there are limited comparative studies that have investigated the performance and quality of Holstein beef. It would be ideal to establish an industry benchmark for the performance of Holstein beef compared to traditional beef bred cattle. This would allow both beef and dairy industries to find an output for surplus bobby calves. Through establishing a viable dairy beef chain we can add value to a product that is economically regarded as low value in the supply chain.

If this pilot study and further studies conclude Holstein cattle performs as well as traditional beef cattle, producers may work towards incorporating a dual purpose animal into their herds. This could be through selection for premium meat quality traits, while maintaining high milk production in dairy herds.

References


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