mla Your levies at work // March/April 2016

Feedback

RESEARCH IN ACTION
SPECIAL EDITION

These producers share how research betters their enterprises

A note from the MD...

This special edition of *Feedback* takes a look at what MLA's research, development and adoption activities have delivered over the last decade and what's in the pipeline in the coming 10 years. The story is told through technical experts from MLA and the industry across areas such as sheep genetics, the feedbase, labour efficiency and cattle productivity. Three producer families also share how research has made a difference to their enterprises.

Keeping the focus on the future, MLA's International Business Managers discuss what the consumer of 2025 might look like and how the industry could potentially reach these future consumers.

This edition is a great read and shows just what livestock levies, matched government funding and private contributions have collectively delivered for the industry and the exciting developments that are coming up to assist the industry to be profitable, sustainable and globally competitive.

This goal also underpins MLA's *Strategic Plan 2016-2020* which is being finalised. This Plan maps out MLA's areas of strategic focus for the next four years and is informed by the priorities outlined in the Meat Industry Strategic Plan 2020 and those of the Australian Government.

Under the terms of its 2012-16 Deed of Agreement with the Australian Government, MLA must complete a Performance Review at least six months before the expiry of the Deed. This includes a rigorous independent assessment of the value of MLA's programs to assess whether these programs provided benefit to stakeholders in the red meat industry and the general community.

The top line results of this assessment are very pleasing: every $1 invested by MLA in marketing, research and marketing in the five years to 2014-15 generates current and future benefits of $6.20.

The next edition of *Feedback* will feature the full results of this assessment, the findings from the Performance Review and an overview of MLA's new Strategic Plan.

Enjoy this special edition.

Richard Norton
MLA Managing Director

Contents

Cover: Colin and Anna Butcher by Anita Jean Photography, Michael Cobiac by Frank Monger Photography and Brian Pownall, contributed.

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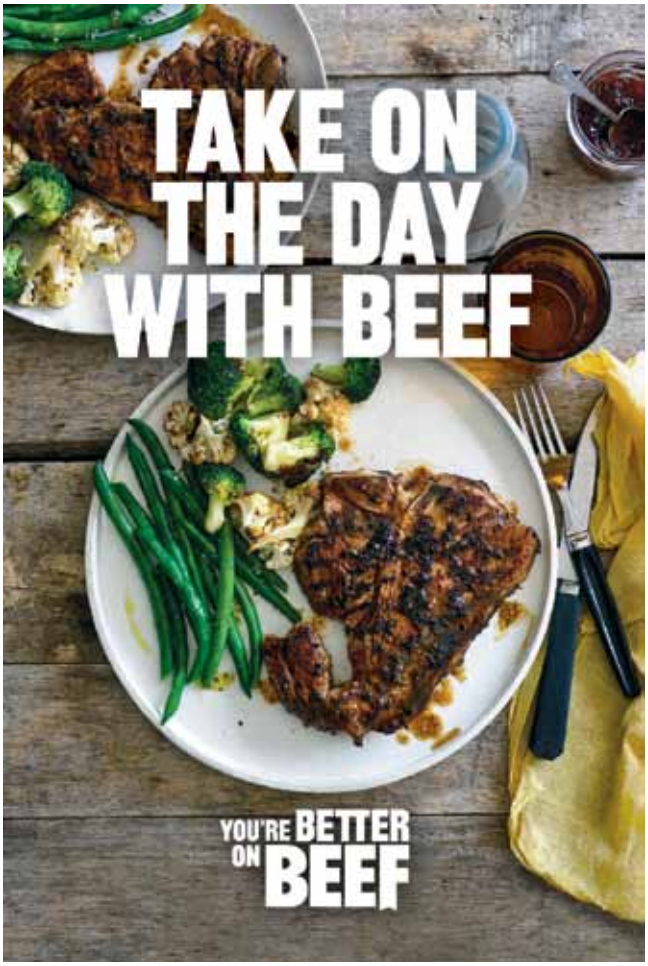
Growing demand

‘You’re Better on Beef’ returns



MLA launched this month the latest round of its highly successful ‘You’re Better on Beef’ campaign, promoting beef’s superior health credentials.

Launching across online, television and social mediums, the campaign brings to life the battles Australian women face every day and the role beef plays in helping overcome them. The advertisements show that in life sometimes you win, sometimes you lose - but with beef, you win every time.

The campaign aims to drive home beef’s key nutrition credentials of protein, iron, and zinc by demonstrating to women that you’re quite literally better on beef.

MLA’s Group Marketing Manager Andrew Howie said said the ‘You’re Better on Beef’ campaign continues to represent a new approach to MLA’s consumer marketing, with a shift from tactical and seasonal campaigns to year-round relevant messages.

Post-campaign results

‘You’re Better on Beef’

The new beef campaign builds on the initial phase of ‘You’re Better on Beef’ which launched in March 2015. Targeting time-poor families, who value nutrition highly, the campaign used sporting cues to demonstrate that beef is the fuel to help you overcome everyday challenges. A further phase of the campaign had a direct message for young Australian women who are not getting enough iron from their diet - with figures showing one in three women are not consuming enough iron.

Post-campaign survey results have shown strong results:

- → as a result of seeing the campaign **54%** of the target audience said they were “more likely to eat beef” versus the benchmark of 42%
- → an increase in claimed per week consumption of beef amongst the target audience (mums) to 1.75 serves, **up 0.20**
- → mothers limiting red meat consumption due to health concerns had been **reduced by 20%** to only 23%.

Australia Day lamb campaign

MLA’s 2016 Australia Day lamb campaign helped deliver a record increase in lamb sales for the Australia Day period - making it the most successful MLA campaign of its type on record.

The “Operation Boomerang” campaign featured Lambassador Sam Kekovitch and legendary SBS newsreader Lee Lin Chin with a host of other well-known Australians bringing Aussies from around the world home to ensure they never “lamb alone”.

The “Operation Boomerang” Australia Day campaign saw a **34.4%** sales lift versus the weekly average, for the week preceding Australia Day, and a **39.5%** sales lift versus the weekly average, for the week of Australia Day.

In profile

Rodney Watt // *Producer and Lambex Chairman*

Looking forward to Lambex 2016

Rodney Watt runs Felix Rams, a 500ha cropping and seedstock enterprise at Greenethorpe, NSW, in partnership with his wife Elizabeth and his mother Valerie. They produce Poll Dorset and White Suffolk terminal rams.

Rodney is gearing up for the MLA-sponsored Lambex 2016 in his role as chairman of the event. Here, Rodney talks to ***Feedback*** about his enterprise and what is in store at Lambex.

Lambex 2016 is located in Albury, NSW, from 10–12 August – what's in store? It will be a celebration of the success of the industry, it will provide an insight into the future, we will hear from some leading producers and we will have some fun. We want to challenge people about the industry and where it is headed in the next 10–20 years. We want to look into whether the industry is producing the right lambs from consumer, producer and retailer perspectives. We want to challenge the industry to not be complacent, to use feedback and communication to drive the supply chain, to be flexible to manage market and climate variability.

What challenges do you face in your enterprise, and how are you tackling them? Our enterprise is 50% cropping, 50% sheep (land use) and like many mixed farming businesses it can be a challenge to get the balance right. I believe we have developed a complementary business, where we can graze stubble and dual-purpose crops. In our seedstock business it is to continually adopt technology and apply it to maximise genetic gain.

What about the opportunities? I'm a self-learner and enjoy analysing our production figures. I believe record keeping should not be for the sake of it, but to guide decision-making. We have used eID (electronic ID) tags since 2011 for data collection and genetic selection, and the next step will be to integrate auto-drafting to manage stock. eID has really focused our performance selection, and the way we handle data and use information in the yards.

What are your production targets? We aim for 175-180% conception; and of those, we aim to rear 90%. Multiples are important to our business – my long-term goal is to wean 100kg of lamb/ewe at 100-days old, and this is only possible with twins and triplets. We join for five weeks in single sire groups (from 20 January), take rams out for three weeks, and then put them back in for four weeks – this is also when ewe lambs are joined. Last year we joined 750 stud ewes plus 300 ewe lambs (with 60% of these getting in lamb) and tagged 1,401 lambs. We sold 370 rams this year and aim to get this to 400 rams/year.

We DNA test all sires and 15% of ram lambs for eating quality traits of intramuscular fat and shear force. For the last two years every joining decision we made had an eating quality consideration to ensure a balance between production and carcase traits and consumer demands.

What are some of the tools/resources you use in your business?

→ Lifetime Ewe Management reinforced the importance of having ewes at the right condition score at joining. By aligning the production cycle with feed availability we aim for a condition score 4 or better at joining and to achieve 160% lambs at weaning.

→ Long-term grazing management records help us to balance stocking rates based on seasonal conditions. Every time I am in the paddock I assess feed quality and availability and stock condition.

→ eID tags are proving really useful – I really don't know how I managed sheep recording without them.

Rodney Watt
E: rodney@felixrams.com

You are invited to Lambex, Australia's largest lamb and sheepmeat expo. Register now at: **www.lambex.com.au**

Research in action

Welcome

Following the 'Research in action' theme of this edition of *Feedback*, MLA's General Manager Livestock Productivity, Dr Jane Weatherley, shares the importance of research, development and adoption to the industry.

MLA is a producer owned organisation that delivers research, development and adoption (R,D&A) services to Australia's red meat industry ... but why is RD&A important and what does it deliver for producers?

We are in an exciting period for research, with giant leaps being made in our understanding and application of science and technology for the red meat industry. For example, we are accelerating the rate of genetic gain through leading genetic evaluation, we are making gains in labour saving technologies such as remote water monitoring systems and our meat eating quality science is the envy of the world.

In this edition we've asked MLA's technical experts to explore what R,D&A has delivered. We also offer an insight into the future direction for R,D&A and what further gains can be made.

R,D&A investment has never been more important. To keep our value chains moving forward while dealing with the challenges of declining terms of trade, market volatility and climate variability, producers need tools, resources and support to improve business performance using the latest science and technology.

The immediate benefits of R,D&A investment are often not apparent. It can be the cumulative outcomes of numerous projects which lead to transformational change. One way to visualise this is to look at the livestock produced only a few decades ago and compare them to the high yielding, fast growing, highly reproductive animals producers breed today.

MLA has moved to implementing an improved producer consultation mechanism which aims to ensure our RD&A investment is right. In a greater capacity than ever before, we have a network of producers helping set the R,D&A agenda through the Southern Australia Meat Research Council, the Western Australian Livestock Research Council and the North Australia Beef Research Council and the multiple regional producer groups which feed into them. An individual producer can join in this process by sharing with their regional group what challenges they face and assist in identifying how R,D&A investment could assist in finding solutions.

Australia's leading research organisations, scientists and industry professionals have been engaged by MLA on behalf of industry to develop 'outcomes' which will drive our industry forward. We invite readers to reflect on just how far our industry has come and to prepare for what is ahead.

Dr Jane Weatherley, MLA
E: jweatherley@mla.com.au

In this edition

This special edition of *Feedback* looks at what MLA's research, development and adoption activities are expected to deliver in the next decade and what past and current projects have already yielded.

The story is told by MLA's technical experts including:

Dr Matt McDonagh, General Manager On-Farm Innovation and Adoption

Dr Jane Weatherley, General Manager Livestock Productivity

Dr Christine Pitt, General Manager Value Chain Innovation

Dr Alex Ball, General Manager Red Meat Innovation

Cattle
Dr Nigel Tomkins, Geoff Niethe, Jane Wightman and Sam Gill

Sheep
Richard Apps, Hamish Chandler and Renelle Jeffrey

Animal health and welfare
Prof Jim Rothwell and Dr Johann Schröder

Feedbase and environment
Cameron Allan and Tom Davison

Supply chain and marketing
Jo Quigley, Sarah Strachan, Andrew Howie and Ben Thomas

Three producer families also share how they've put research into action on their properties to help better their enterprises: Colin and Anna Butcher, Michael Cobiac and Catherine Bell, and Brian and Judy Pownall.

RESEARCH IN ACTION SPECIAL EDITION

Research in action

Facing challenges through R,D&A

Management skills and informed decision making, underpinned by timely innovation, tools and resources, are essential for the industry to keep responding to a changing production environment and declining terms of trade (see Figure 1). That's why it's essential for industry to continue investing in relevant agricultural science and research.

CSIRO Research Director for Productive Adaptive Livestock Systems, Drewe Ferguson (pictured right), said research, development and adoption (R,D&A) has never been as important as it will be in the next decade.

"I see the big three challenges facing agriculture in the future as competition, efficiency and sustainability," he said.

"If animal production is to maintain the 2% growth in productivity required to feed a hungrier world, our industry needs to discover and embrace new innovative solutions. R&D must be front and centre to drive sustainable gains in efficiency right across the supply chain."

The very nature of R&D is that sometimes it can take years – even decades – for transformational research to translate into new technologies or practice changes that can improve business performance at the farm gate.

Quick wins can occur but, as Drewe pointed out, some of the longest research-to-adoption pipelines have delivered the biggest transformations.

For example, the first discussions about a new beef grading system based on palatability began in 1996, with the first version of Meat Standards Australia (MSA) commercially released in 1999. The adoption of MSA still took time to penetrate the market. MSA continues to evolve through ongoing R&D, with the seventh version of the model released in 2013.

The transformative animal breeding technology, the Best Linear Unbiased Prediction (BLUP) model, is another example of a long-term research investment by industry. It generates Estimated Breeding Values (EBVs) and underpins the genetic selection tools for our beef and sheep industries.

While this technology is now highly sophisticated and is considered world-leading, it requires ongoing investment to incorporate further parameters to develop more EBVs to assist producers to meet customer expectations.

R&D uptake

"Clearly, we need to develop better strategies to expedite technology adoption," Drewe said.

Looking back, he said lessons learned included involving the right people early on: the people who have influence or relevance in the pathway to adoption – the innovative producers.

"Producers are the end users, so they must play an integral role in setting the research agenda to ensure future R&D is practical and can improve their efficiency, sustainability and competitiveness," Drewe said.

Drewe also saw early partnerships with technology providers as integral, so concurrent development and commercialisation could reduce the time it took for new products and technologies to become available to users.

Digital delivery

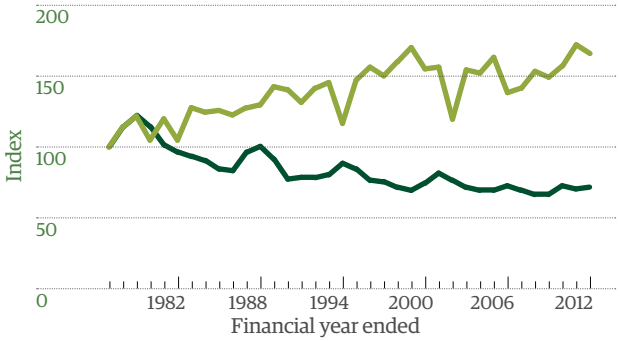
Drewe said digital technologies would transform agriculture.

"It is crucial for agricultural R&D to take advantage of the digital revolution, especially as a vehicle of extension and communication to engage producers in regional Australia. You can't go past the profound effects that digital technologies are already having on farming businesses and the supply chain," he said.

"Clearly, there is so much more potential to harness digital technology to integrate real-time information about pastures, livestock and climate and inform prescient decision-making."

Dr Drewe Ferguson
E: drewe.ferguson@csiro.au

Figure 1 **Broadacre productivity and producers' terms of trade, 1977–78 to 2012–13**



Note: Terms of trade index reflects prices received versus prices paid for all agricultural industries; total factor productivity index reflects productivity in broadacre industries only.

Source: Department of Agriculture and Water Resources

Industry snapshot – 2025

Mick Keogh is the Executive Director of the Australian Farm Institute – a 'think tank' established to investigate the issues facing food and fibre producers. Mick is leading industry discussions to look at strategies to underpin an innovation culture for the future of agriculture. He was also recently appointed to the part-time role of Agricultural Commissioner to the Australian Competition and Consumer Commission.

"Farm businesses will face some tough decisions in the next decade, with changing demographics and terms of trade," he said. Here are his predictions for what the livestock industry will look like in 2025:

1. Model businesses

The family farm is here to stay despite the growth of corporate farming businesses. A well-run family enterprise can hold its own against a corporate farm and many family farms are run as businesses with a 'corporate' approach to strategy, business structure and decision-making. What is likely to change is the finance associated with these farms, especially as they grow. There are a number of emerging novel equity and other financing arrangements, and these are likely to become more important in the future for large family farms.

2. Crunch-time for the 'middle producers'

Farming is now broadly characterised by three main groups. There are the 40% of livestock producers who have an annual production output of less than $100,000 and are responsible for 6% of total agricultural production in Australia. This group relies on off-farm income and is vital for the regional economy and as a link to the non-farming community. The second group comprises the 20% of producers who have an annual turnover of more than $500,000 and account for 75% of total production. The third group comprises 40% who will face the biggest decisions over the next decade when it comes to enterprise scale and how to retain or increase profitability.

3. A refined market focus

We've already seen producers embrace new pathways to market beyond the traditional saleyards, and build relationships with processors, feedlots and backgrounders. For many producers (some are already doing this), the next challenge will be defining where they fit in the market in response to global trends. There is no such thing as an average producer, so there isn't a one-size-fits-all model. Producers will have choices ranging from turning off high-value products for premium or specialised markets to focusing on cost of production and efficiency for a volume market. Research and development will be critical to help producers remain competitive, regardless of the market.

4. Customers who demand integrity

Consumer perceptions matter. The reputation of Australia's red meat products is backed by integrity systems based on R&D. Competing nations are already making inroads with their own quality standards, so Australia needs to keep moving forward to make productive gains – and this relies on R&D to support the development of information, technology and systems. Digital information systems linked to the National Livestock Identification System are most likely to be an important way to meet new compliance and consumer requirements, without adding excessive costs.

Mick Keogh // E: keoghm@farminstitute.org.au

How to keep up-to-date on R&D outcomes

Read:

→ MLA's *Feedback* magazine: **www.mla.com.au/feedback**

→ R&D reports: **www.mla.com.au/Research-and-development**

→ MLA e-newsletters and to sign up for *Friday Feedback*: **www.mla.com.au/News-and-resources**

Watch:

→ MLA's YouTube channel: **https://www.youtube.com/user/meatandlivestock**

Learn:

→ Producer Demonstration Sites: **www.mla.com.au/pds**

→ Producer case studies: **www.mla.com.au/Extension-training-and-tools/Producer-case-studies**

Participate:

→ Events and workshops: **www.mla.com.au/events**

Contribute:

→ Regional red meat and livestock committees and advisory councils: **www.mla.com.au/About-MLA/RD-Consultation**

RESEARCH IN ACTION SPECIAL EDITION

Next big things

What's around the corner for Australian red meat production? We asked 10 of MLA's technical experts to share their predictions for what will have an impact on-farm in the next 10 years.

1. Fully inked

Animal health

A tattoo that can be applied to animals using a simple, single-use patch, and which will change colour according to their health status.

The goal is to develop intelligent inks that will react to progesterone (pregnancy), cortisol (stress) and high temperature (infection or heat stress).

Potential applications include tattooing the noses of breeding cows with a progesterone-sensing ink. When it comes time to pregnancy test, producers could run the cows up the race and draft based on tattoo colour, providing significant labour efficiencies.

Richard Apps, MLA Program Manager Genetics and Sheep R&D // E: rapps@mla.com.au

2. Numbing pain relief

Animal welfare

Castration will be less painful with the 'NumNuts' device.

The tool, designed to be used by producers, applies a ring and local anaesthetic simultaneously, greatly reducing animal discomfort and stress.

With the R&D phase winding up, the emphasis is now on finding a commercial partner to deliver 'NumNuts' to the marketplace.

Dr Jim Rothwell, MLA Program Manager Animal Health, Welfare and Biosecurity // E: jrothwell@mla.com.au

3. Efficient converters

Grassfed cattle productivity

It may be 'blue sky' research now, but work on identifying and transferring energy-efficient rumen microbes could have huge implications for herd wellbeing, profitability and a reduction of the industry's carbon footprint.

Researchers are drilling into the microbial population of the rumen and finding new biochemical pathways to manipulate animals' ability to convert feed to energy.

By transferring rumen fluid, animals could be pre-programmed from weaners to make them more efficient digesters for their intended environment, for example, for the feedlots of northern Australia.

The win-win is that more efficient feed converters tend to have lower methane emissions.

Dr Nigel Tomkins, MLA Manager Grassfed Beef R&D E: ntomkins@mla.com.au

4. Information superhighway

Cattle genetics

There will be a closer relationship between what producers breed for and what they get paid for in the supply chain.

Closer alignment between consumers, producers and products will be seen, with feedback tools such as MSA and Livestock Data Link becoming major drivers of genetic improvement.

Payment will be based on more accurate measures of yield and eating quality from the processing sector and those measurements will flow back to producers, enabling them to make better bull selection decisions based on their herd's feedback performance.

Sam Gill, MLA Manager Beef Genetics, Data Insights and Livestock Productivity // E: sgill@mla.com.au

5. Powerful pastures

Feedbase

Continued research into improving Australia's pasture base and its management should result in broader adaptation and persistence of legumes that boost soil nitrogen and improve pasture quality, dry matter production and livestock productivity.

There is likely to be a convergence of better plants and improved knowledge of their management, supported by technologies to improve and reduce the risk in business decisions.

More producers will realise the benefits of planting legumes, such as desmanthus, leucaena and stylos, to address seasonal variations. This should improve land condition, with increased adoption of pasture management tactics and improved skills at matching stocking rates, feed supply and long-term carrying capacities.

Cameron Allan, MLA Program Manager Sustainable Feedbase Resources // E: callan@mla.com.au

6. Traits for the plate

Sheep genetics

Genomic/DNA technologies and the capability to measure eating quality in processing plants will provide a greater focus on improving the eating quality of lamb while improving productivity traits.

Sheep Genetics (co-invested by MLA and Australian Wool Innovation) is working towards releasing the first indexes that include eating quality by May this year.

Improvements are also being made to reproductive traits. The main breeding value for reproduction is 'number of lambs weaned'. Current developments are working on splitting this into the components of fertility, litter size and lamb survival.

Hamish Chandler, MLA Manager Sheep Genetics E: hchandler@mla.com.au

7. Strengthening the chain

Market information

Livestock Data Link (LDL) aims to provide producers with more timely and accurate slaughter feedback, showing producers their livestock in processor grids and how they performed relative to other stock (in a graphical format). It also provides links to online support tools when non-compliance is identified.

The goal is to lift compliance to market specifications, saving the beef industry up to $51 million a year and the lamb industry $8.4 million a year in losses due to non-compliance. LDL is being piloted in nine supply chains across 15 cattle and sheep plants.

Jo Quigley, MLA Manager Integrated Industry Systems E: jquigley@mla.com.au

8. It's a scan

Value chain

Real-time, objective measurement of profitable carcase traits that determine elements of meat yield and eating quality will be delivered by modern scanning technology.

This technology may include high definition cameras, dual-emission X-ray imaging, CT scanning, hyperspectral cameras and will have applications in beef, sheep and goat processing, as well as live animal measurements.

Objective measurement will underpin value-based pricing, with research showing significant benefits for producers turning off animals that display these desirable carcase traits: up to $900 more for cattle and $90 more for lamb, compared with prices based on traditional weight and subjective fat measurements.

Dr Alex Ball, MLA General Manager Red Meat Innovation E: aball@mla.com.au

9. A step forward

Animal health

Work is underway to develop an effective vaccine to protect sheep against all strains of footrot.

The vaccine would protect sheep from body weight losses and reduce meat and wool production impacts of virulent footrot.

The project is using gene-sequencing technology and builds on earlier work supported by Australian Wool Innovation.

Dr Johann Schröder, MLA Project Manager Animal Health and Biosecurity // E: jschroder@mla.com.au

10. In neutral territory

Environment

Producers will have more opportunity to be financially rewarded for good land stewardship and on-farm management practices that produce carbon neutral products.

Biodiversity Credits (which relate to BioBanking) may gain momentum during the next decade, to join the Emissions Reduction Fund's carbon credit auctions as a viable additional income stream for producers.

Currently there are two schemes, the NSW 'BioBanking' scheme and the Victorian Native Vegetation Framework. A national scheme will encourage more producer participation.

The next decade will also provide producers with the opportunity to showcase their diminishing carbon 'hoof print' through the supply of certified carbon-neutral products.

Dr Tom Davison, MLA Manager Sustainable Feedbase E: tdavison@mla.com.au

RESEARCH IN ACTION SPECIAL EDITION

Research in action

Over the next six pages, you'll meet three producer families who will share throughout this edition of ***Feedback*** how they've put research into action on their properties to help better their businesses.

Sowing seeds of change

Colin and Anna Butcher (pictured below) planted their first nursery paddock of the hard-seeded legume serradella in 2012. Soon after, they began collaborating with researchers and hosting on-farm trials, in return for information and support in managing their new pastures. Margurita French serradella has since become their dominant pasture, successfully contributing to both the cropping and livestock enterprises.

'Mailrock Farm' is a family-owned and run mixed farming enterprise, producing export oaten hay, canola, wheat, barley and Dorper sheep for meat production in Brookton, WA. Colin and Anna are both involved in the management and operational aspects of the business.

"Our aim is to have a productive business that is both profitable and sustainable – so it's essential for us to adopt and adapt to change," Colin said.

"Our adoption of the innovative pasture legume Margurita French serradella has reduced risk and improved profitability. The soil is less prone to erosion and our dependence on artificial nitrogen has been significantly reduced." →

Snapshot

Colin and Anna Butcher, Brookton, WA.

Property: 2,730ha

Enterprise: Cropping and self-replacing Dorper sheep flock

Livestock: 2,600 White Dorper ewes. In 2015, 700 replacement ewes were retained, while 650 older ewes were mated to Dorset terminal sires and sold.

Pasture: Majority is Margurita French serradella; a couple of paddocks of Casbah biserrula and some leftover sub-clovers and poorer pastures in the rocky hills. Trying to establish biserrula in the rocky hills.

Soil: Predominantly duplex with sand over gravel clays. Sandy loams and areas of poorer, non-wetting sands.

Rainfall: 400–450mm

→

Planting of this legume on all arable parts of the farm will be completed this year.

Colin's family has been farming on 'Mailrock Farm' for several generations. Under Colin's management, it has evolved from Merino sheep and cattle production – with grain and hay grown for the livestock – to cropping for grain and export hay production, with a complementary, self-replacing Dorper flock.

"Declining terms of trade and poor results from clover-based pastures because of dry seasons and soil acidification, plus poor profitability from lupins, drove the need to find an alternative legume for our cropping system," Anna said.

"We needed to reduce the nitrogen (N) input costs and provide high-value food for the sheep. Serradella has done just that.

"In 2015, we saved about $70,000 on N and we did not supplementary feed any of our sheep, providing savings in both feed costs and labour.

"It's amazing the difference it has made to our lives."

"Increased leisure time has been a major benefit of growing serradella as we don't have to feed sheep or spread nitrogen," Colin said.

"The savings have allowed resources to be directed to liming to increase productivity and we've used the free time to go on holidays."

According to Anna, collaborating with research teams has been critical to their success.

"We have been involved in numerous trials of alternative legumes funded by MLA, the Grains Research Development Corporation and Wheatbelt Natural Resource Management, and conducted by Murdoch University, CSIRO and Department of Agriculture and Fisheries Western Australia's (DAFWA) pasture team. In 2015, there were six separate trials underway here," she said.

"When we adopt something, we want to be confident it will work. When the R&D work is done on our farm we know the findings are directly applicable to our farming systems. The research teams also provide invaluable assistance to us in adopting the new technologies and implementing them successfully."

Colin and Anna said they have a good working relationship with researchers from Murdoch University, the DAFWA pasture team, and CSIRO, and feel it is important to provide them with access to land to validate their research findings.

"We have a mix of soil types and being close to Perth makes it easier and cost-effective for the researchers to access their trials," Colin said.

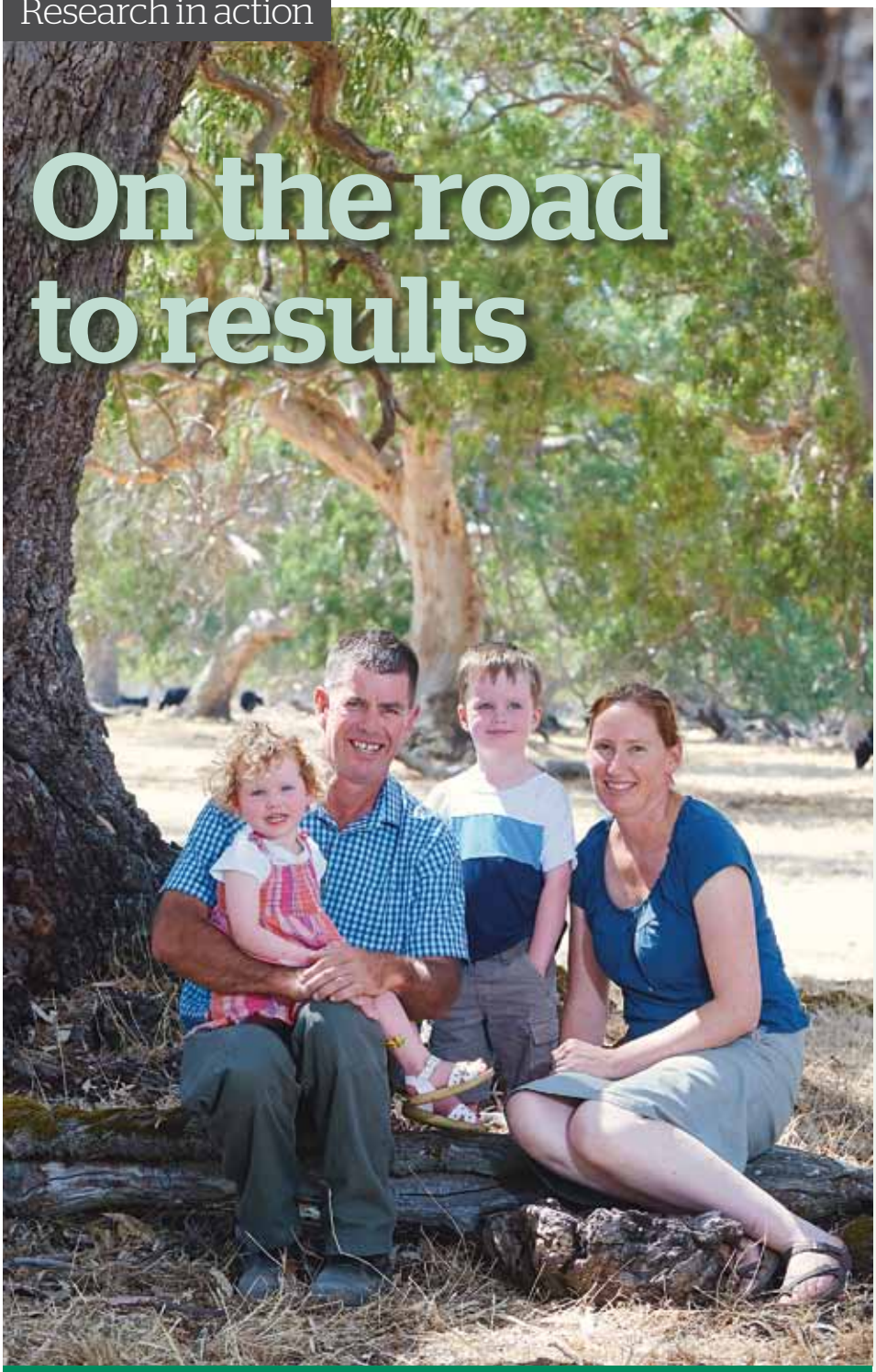
"In return, we have access to real-time data and can view the trials throughout the year."

Colin and Anna Butcher
E: annabutcher@activ8.net.au

RESEARCH IN ACTION SPECIAL EDITION

Research in action

On the road to results



South Australian livestock producer Michael Cobiac is developing an efficient, viable and flexible management system that responds to seasonal and market challenges.

After a career in cattle and pasture management research with the Northern Territory Government and a stint as an oyster farm manager at Coffin Bay on the Eyre Peninsula, Michael returned to his family's farm in 2010 and bought it in 2014.

He now runs the new business with his partner Catherine. The couple have two children: William, five, and Zoe, two (pictured left).

As the business's sole labour unit, Michael is set on streamlining production and improving labour efficiency. For example, he is consolidating the sheep enterprise to focus on meat production and will start to buy in, rather than breed, replacement ewes.

He is also implementing strategies to target the three profit drivers in his business.

Snapshot

Michael Cobiac and Catherine Bell, Robe, SA.

Property: 600ha, 550ha developed for grazing, remainder is native scrub

Enterprise: Cattle and lamb production

Livestock: 230 breeder self-replacing Angus herd, 1,000 Merino ewes joined to Merino and Poll Dorset rams

Pasture: Perennials, including phalaris, cocksfoot, fescue and annuals such as Italian rye grass and clover

Soil: Grey sandy loam with a limestone layer at about 30cm

Rainfall: 620mm

Driver 1: stocking rates

"The property is currently stocked at less than its climatic potential, so I see stocking rates as the real driver of increased productivity," Michael said.

"As land around the south-east is tightly held, I need to make this property more productive."

Michael has set an interim goal of lifting the total stocking capacity of the property to 8,000 dry sheep equivalent (DSE) within three years by improving the productivity and use efficiency of his pastures.

The current stocking rate is 6,500 DSE or 12 DSE/grazed hectare, but research presented at a "More Lambs More Often' workshop Michael attended suggested that stocking rates of about 15 DSE/ha can be more profitable, without a significantly higher risk of making a loss in a poor season.

Michael uses MLA's More Beef from Pastures (MBfP) and Making More From Sheep (MMFS) tools, such as feed budgeting and pasture monitoring, to assess pasture condition and availability. He is implementing deferred grazing and confinement feeding at the beginning of the growing season to provide pastures with the best opportunity to grow.

Infrastructure development plans include subdividing paddocks into 20 hectares to enable effective rotational grazing and a new set of yards for more efficient stock handling.

Driver 2: fertility rates

Michael has set body condition score and weight-for-age targets to lift fertility, drawing on what he learned from MBfP and MMFS.

He aims to keep breeding cows at a condition score of between 3 and 3.5 throughout the year. Heifers are expected to reach 400kg by 14 months of age; Merino ewe lambs should reach 45kg by seven months of age.

Once females are joined, his production targets are:

- → Cattle: 95% of cows to conceive within a six-week joining period. Of those that conceive, 95% should give birth to healthy calves unassisted and 100% of healthy calves should reach weaning.
- → Sheep: 95% of ewes to conceive within a five-week joining period. Of the detected pregnancies, 95% should result in a healthy lamb born unassisted. More than 95% of healthy lambs should make weaning.

Michael joined Merino ewe lambs for the first time in January, to lamb as one-year-olds. He worked with his ram breeder to select White Suffolk sires to ensure easy lambing.

"My main focus will be to ensure these ewes reconceive when they are one-and-a-half years old, otherwise there is no point to joining them as lambs," he said.

Strategies to achieve this include providing adequate nutrition for their continued growth, segregating according to pregnancy status and carefully managing ewes with multiple lambs in small groups. Michael will closely monitor all ewes and implement required management to maximise their chances of conceiving again next joining.

Driver 3: growth rates

Michael has strict weight-for-age targets for non-breeding animals. Steers are to reach 400kg by 12 months, heifers are to reach 400kg by 14 months and terminal lambs should achieve 22kg carcase weight by 18 weeks of age.

While Michael achieves many of these production goals each year, he is yet to achieve them all in a single year.

"That's the challenge for me and every other producer – to set high standards and work hard to achieve them. Once I have developed a management system to reach these goals, I then need to continue achieving them in all but the most extreme seasons," he said.

Hand-in-hand with these production targets is Michael's goal to have higher-than-average production from lower-than-average costs/ha.

"I see benchmarking as the only way to ensure I'm being efficient in this business," he said.

Michael is building up sufficient production records to support formal benchmarking, and participates in producer groups such as Lifetime Ewe Management to develop skills and knowledge.

He draws on MLA resources such as the Cost of Production calculator (to identify what data to collect for decision-making) and the Feed Demand Calculator.

Watch Michael explain his journey in an MBfP video at: **www.youtube.com/meatandlivestock**

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MLA's National Livestock Reporting Service: **www.mla.com.au/prices-markets**

Cost of Production and Feed Demand calculators: **www.mla.com.au/tools**

More Beef from Pastures **www.mla.com.au/mbfp**

Making More From Sheep **www.makingmorefromsheep.com.au**

RESEARCH IN ACTION SPECIAL EDITION

Research in action

Onwards and upwards

Operating a successful beef breeding business is a constant 'work in progress', according to Brian Pownall (pictured right) and his wife, Judy.

The couple believe in setting goals to balance their priorities of profitability, environmental sustainability, professional development and emotional wellbeing.

"All our goals are really interwoven, but we are a family operation and family always comes first," Judy said.

"One of our most important goals is to achieve economic independence from the farm through income diversification, making it easier for our children to return to the business.

"In the long term we hope that 50% of our income will be derived from off-farm investments."

The couple, from Leichardt Station, near Dysart in Central Queensland, constantly work on their 'road map' by focusing on the key elements of stocking rate management, increasing long-term carrying capacity, improving ground cover and biodiversity, and challenging themselves to improve their knowledge and skills.

Personal training

Learning plays a big part in the Pownalls' success, with the couple committed to completing at least one self-improvement or business-improvement course each year.

"This includes us, family and everyone who works for us. It's important we're all on the same page," Judy said.

Recently, this included attending workshops on low-stress stock handling, better grazing of tropical grasslands, benchmarking and key performance indicators, improving negotiation skills and Grazing for Profit schools.

"I'd like to learn more about BREEDPLAN and use more of the genetic tools available," Judy said.

Brian Pownall works to keep his cattle in good condition to achieve faster turn-off times.

"This year we want to do a lot more work on bull selection, including using BBSEs (Bull Breeding Soundness Evaluations) and EBVs (Estimated Breeding Values) to improve the fertility and growth rates of our herd.

"We're particularly interested in herd fertility – it's a profit-driving trait we want in our business."

A growth pattern

Despite variable rainfall in the past six years, the Pownalls have increased average carrying capacity by 30% and profitability by an average of 25%.

The key, they say, is flexible management, including destocking quickly to match carrying capacity, and preserving ground cover and pasture base.

"We've moved away from a traditional northern production system where we had 12,000ha divided into 23 paddocks and grew out animals for the Japanese ox market," Judy said.

Snapshot

Brian and Judy Pownall, Dysart, Qld.

Property:
12,000ha

Enterprise:
Cattle breeding, trading and cropping

Livestock:
3,500 livestock units including 800 Droughtmaster and Brangus breeders

Pasture:
800ha leucaena, buffel grass, bambatsi panic, forest Mitchell grass, blue Mitchell grass, button grass and native speargrass

Soil:
Black clay and lighter red soils

Rainfall:
600mm

"Now, we rotationally graze 63 paddocks, are about to subdivide a further two paddocks into eight and plan to continue the subdivision."

Their target market has changed, with the emphasis now on the feeder trade (450kg liveweight) with faster turnoff times and more focus on faster growth rates.

Watering points are also being increased, so stock are never more than one kilometre from water, which reduces erosion, soil compaction and stock stress.

The Pownalls don't believe in pasture monocultures and complement their native grasses with Rhodes grass, buffel grass, bluegrass, butterfly pea and 800ha of leucaena.

"We've also trialled desmanthus to boost nitrogen and we are still experimenting with how to handle it," Judy said.

To bolster their income diversity, the couple have a 2,024ha cropping program with a sharefarmer.

"Cropping is not as ecologically balanced as grazing, but it is an important profit driver, which helps fund farm improvements," Judy said.

Their grazing strategy is simple, with stock divided into three main mobs grazing paddocks at intervals to allow about 60 days' rest during the wet season and up to 120 days' rest during the dry.

Judy said their target stocking density is about 12 animals/ha, but they aren't there yet.

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BREEDPLAN:
http://breedplan.une.edu.au

Research in action

Technical experts from MLA and the wider industry share, over subsequent pages, what research, development and adoption activities are in the pipeline and what past and current projects have already delivered.

Themes include the northern and southern feedbase, beef and sheep genetics, cattle and sheep productivity, animal welfare, animal health and biosecurity, environment and climate variability, supply chain and market compliance.

The three producer families introduced on pages 10-15 are also featured, showing how they are putting research into action in their enterprises.

Northern feedbase

A driver for growth

The feedbase underpins all livestock production. Over the past decade there has been a rapid increase in producer knowledge of the northern feedbase and a better understanding of what is possible.

MLA-funded research provides a clear direction on best-practice grazing strategies to achieve long-term profitability and sustainability and MLA's current and future investments will build on those outcomes.

Coming up

- **Psyllid resistant leucaena:** Leucaena will be more widely used across northern Australia with the imminent release of a new psyllid-resistant variety of the tropical legume pasture. It will give producers the opportunity to expand their leucaena-based pastures, especially in coastal areas where psyllids have a huge impact on the amount of edible leaf produced. The new variety, Redlands, could open up a further 1.5 million ha of Queensland to leucaena production, as well as areas of the Northern Territory, which could, in turn, produce a net benefit to the industry of $500 million or more a year.
- **Gas reductions:** Leucaena improves growth rates of cattle and recent research by CSIRO Townsville also showed that cattle grazing on leucaena-based pastures emitted less methane than cattle grazing grass-only pastures. The more energy that is captured that would otherwise be lost in producing methane from the rumen, the more kilograms of beef that can be produced.
- **Embracing change:** Northern producers may take the opportunity of higher cattle prices to explore their options and apply more research outcomes on farm. This may include strengthening their business viability by addressing pasture rundown with legume plantings, the selective application of fertilisers and strategically feeding phosphorus (P) supplements to cattle in deficient areas.

Progress report

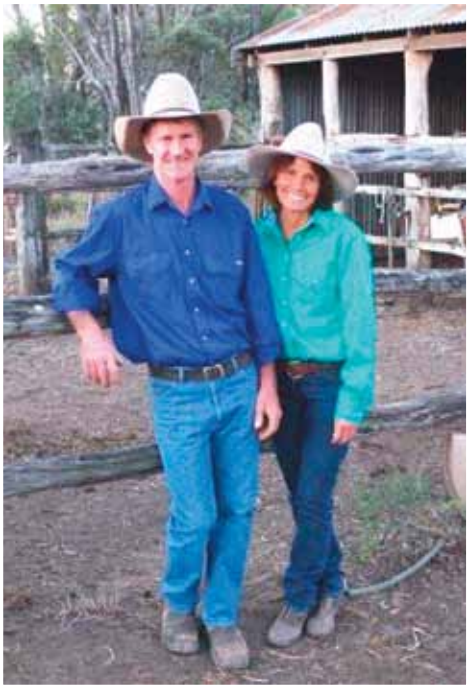
- **Wambiana grazing trial:** Large-scale research projects, such as the 18-year, MLA-funded grazing trial, run by researcher Dr Peter O'Reagain and his team at Charters Towers, have provided producers with great 'grassroots' guidance. Peter's work has demonstrated that numbers are not everything and that having a flexible stocking rate, set around a property's long-term carrying capacity, that reacts quickly to reflect seasonal conditions, and uses periodic wet season spelling, is the most profitable and sustainable approach.
- **Leucaena:** According to MLA-funded reviews, leucaena has increased northern producers' profitability by adding an estimated 50,000 tonnes of liveweight gain a year, worth an extra $100 million. It is now grown on more than 200,000ha of Queensland, with smaller stands in the Northern Territory and Western Australia.
- **High-output forage systems for meeting beef markets:** This project has helped producers make profitable forage choices and was undertaken by Maree Bowen and her research team across 24 sites in the Fitzroy River Catchment during 2011-2014. It compared the performance of oats, forage sorghum, lablab, leucaena-grass, butterfly pea and perennial grass pastures in commercial conditions. Maree said that despite the wide variation in productivity and profitability for annual and perennial forages in the area, perennial legume-grass pastures were found to be more profitable than perennial grass pastures and annual forages. "A key achievement was the development of an extension package, 'Feeding Forages in the Fitzroy'," she said. "It brings together information on agronomy, management, forage and cattle production and economic performance from high-quality forages."

→ **Phosphorus deficiency:** Producers are now more aware of options to improve their profitability, such as planting legumes and applying P fertiliser. Research by Queensland Department of Agriculture and Fisheries Senior Pasture Agronomist Gavin Peck (pictured below) showed that investing in P fertiliser is likely to pay off in the Brigalow Belt, which is home to more than one-third of the northern beef herd. "When establishing legumes into grass pastures on low P soils, economic analysis showed funds invested in P fertiliser could return between 9% and 15%," he said. "P applied to established legume-based pastures in low P soils could produce a 12–24% return on investment."

→ **Legumes for longevity:** An MLA study, also led by Gavin Peck, showed legumes such as Caatinga stylo, leucaena or desmanthus with buffel grass pastures increased carrying capacity, resisted invasion by Indian couch and Sabi grass, and showed a significant response to P fertiliser. "Grazing trials show that even 18 years after the initial planting, the legume/pasture paddock produced more forage and had dramatically less weedy grasses," Gavin said.

Research in action

Brian and Judy Pownall



"We don't own any more grass than we did 20 years ago, but we have learnt how to do a lot more with it.

We produce 'flat backs' for the feedlot market and have changed our grazing practices from traditional set-stocking in large paddocks to a time-controlled grazing system.

Our stock run in three main mobs, which graze paddocks at intervals allowing paddocks 60 days' rest during the wet season and up to 120 days' rest during the dry.

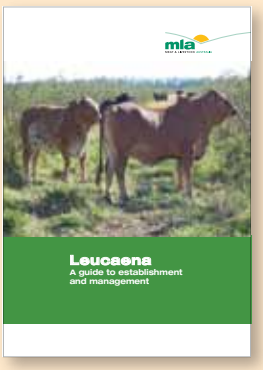
The aim is to keep pasture healthy and productive, and able to respond quickly to rain and ensure good ground cover.

Infrastructure underpins the approach. Gradually, we have divided our 12,000ha into 63 paddocks (from its original 23) with further subdivision planned.

Pasture diversity is also important. We complement native pastures with Rhodes grass, buffel grass, bluegrass and butterfly pea and 800ha of Cunningham leucaena.

We are also trialling desmanthus to boost nitrogen."

Want to know more?



To read more on the ongoing Wambiana grazing trial visit: **www.futurebeef.com.au/resources/projects/wambiana-grazing-trial**

To assess a property's long-term carrying capacity enrol in the MLA EDGE Network's Grazing Land Management course at: **www.mla.com.au/Extension-training-and-tools/EDGEnetwork**

The Stocktake Plus program provides training as well as an app for calculating forage budgets at: **www.stocktakeplus.com.au**

Download the MLA publication *Leucaena: a guide to establishment and management* at: **www.mla.com.au/leucaenaguide**

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Southern feedbase

From the ground up

The feedbase powers southern Australia's livestock industry. As it improves, so does the ability to meet future global demand for red meat. Southern feedbase research, development and adoption will continue with a systems-based approach looking at the interaction of all factors affecting the feedbase. These include water, soil health, weed burdens, pasture species, cropping rotations, total grazing pressure (including pest animals), biodiversity, an increasingly variable climate and, of course, individual enterprise goals.

MLA will continue to invest in the development of decision-support tools with a whole-farm focus to address the causes of feedbase rundown, not just the symptoms.

Coming up

MLA, its predecessors and industry partners have invested in a range of valuable pasture and feedbase projects, including Sustainable Grazing Systems, Grain & Graze, Sustainable Grazing on Saline Lands, Pastures Australia, EverGraze, and Enrich (multi-purpose shrubs).

In 2011, those diverse projects were brought together under the MLA-managed Feedbase Investment Plan.

The plan's overall 2020 goals are for pasture improvement to add $25 million to on-farm value per year and for the number of kilograms of meat produced per hectare to rise at 2.5% per year, in a sustainable manner.

Project areas in the planning stages include:

→ **Risk management tools**
Tools are being developed to help determine the most appropriate mix of on-farm resources (e.g. optimum mix of crops, pastures and livestock) to increase productivity and reduce the cost of production, while also reducing environmental impacts. They aim to assist producer decision-making to reduce risk and uncertainty. The research will take issues and opportunities offered by future climates, technologies, livestock and pasture developments into account.

→ **Uniting against pest animals**
Pest animals, like weeds, are not constrained by jurisdictional boundaries. MLA is partnering with the Invasive Animals CRC and the University of New England on research to shape behaviours by organisations, community groups and producers for the common goal of managing pest animals.

→ **Total grazing pressure management tools**
The project is working on a package of best-practice management, information and tools producers could use when making decisions about animals, soil, water, feedbase, landscape and business management. It aims to have tools that offer cost comparisons and estimate the likelihood of success of different total grazing pressure management strategies.

Progress report

- **Grain & Graze:** Grain & Graze was a national research program funded by MLA, Australian Wool Innovation, Grains Research and Development Corporation and Land & Water Australia, aimed at improving the financial and environmental performance of mixed farming systems. More than 3,200 producers adopted Grain & Graze recommended practices.
- **EverGraze:** Through the Future Farm Industries CRC, EverGraze developed regionally relevant production system guidelines to help producers quantify the productivity, economic, environment, risk and lifestyle impacts of implementing changes on-farm. The project used a range of extension methods to engage more than 7,800 producers across southern Australia, affecting practice change with a return on investment of 9:1.
- **Enrich:** The project began in 2005 to improve the sustainability and productivity of low-rainfall grazing systems with forage shrubs. When the final phase concluded in 2014, it had resulted in more than 550 producers changing farm practice.
- **Plant breeding and evaluation:** MLA is working with CSIRO, state primary industry departments, universities and seed companies to develop new grass and legume pasture varieties, as well as improve existing pastures, by, for example, developing acid-tolerant lucerne and improving the information to producers on cultivar selection.
- **Participatory R&D:** MLA currently has 30 producer groups across Australia working with researchers to test if and how new research fits or could fit within farm systems.
- **Climate change adaptation:** MLA's support of the Climate Variability in Agriculture Program contributed to the development of POAMA, an improved seasonal climate prediction model used by the Bureau of Meteorology.

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Research in action

Colin and Anna Butcher

"We established our first nursery paddock of French serradella seed in 2012 with a Wheatbelt Natural Resource Management grant.

Since then, we have been involved in numerous trials of alternative legumes funded by MLA, Grains Research and Development Corporation and Natural Resource Management and conducted by Murdoch University, CSIRO and Department of Agriculture and Fisheries Western Australia's pasture team. These have included paddock-sized trials of different sowing techniques and times for Margurita French serradella, chemical tolerance and impacts, new rhizobia and feed values. In 2015, there were six separate trials under way on our property.

We've also hosted lots of field days that have been attended by producers and international, interstate and local researchers, plus local and interstate grower groups.

Working with the researchers has been enormously beneficial - we give them the land and they give us the information. As a result, we have quite rapidly adopted serradella and biserrula over the farm and have enjoyed massive increases in profitability and decreases in cost of production.

These legumes have lessened the risk for both our cropping and livestock enterprises and we now have time and money available for other activities, such as holidays, or to fix other production-limiting factors, such as liming to fix acid soils."

RESEARCH IN ACTION SPECIAL EDITION

Beef genetics

Trying out the new genes

The benefits of focusing on beef genetics speak for themselves. The use of genetics has taken huge strides in the past decade, taking much of the guesswork out of producing profitable cattle that satisfy consumer demand. Investment has delivered an internationally recognised and world-leading genetic evaluation system.

Coming up

Within the next decade Australian producers will be closer to the coalface, with far greater integration between producers, processors and consumers.

Producers assessing and making decisions on feedback from carcase quality analysis systems, such as the already operational Livestock Data Link (LDL), will be routine and they will become the major drivers of genetic gain. Read more about LDL on page 33.

Producers will have much better measurement technology both on-farm and off-farm, and genetic evaluation – particularly genomics – will be commonplace.

Collection of data such as weight, fertility traits and condition score will be automated and new decision-making tools are likely to arise from that.

Progress report

- **Increased data and accuracy:** Genomic tests and DNA technology have become mainstream and information pouring into BREEDPLAN from the Beef Information Nucleus (BIN) projects has significantly increased the number and accuracy of Estimated Breeding Values (EBVs) for the Angus, Limousin, Charolais, Brahman and Hereford breeds. There are now 24 breeds involved in performance recording with BREEDPLAN.
- **Discovery of the key drivers of reproduction:** In northern and southern herds this has had an enormous impact on management systems, providing strategies and tools to improve herd profitability. In particular, the development of a genetic test for fertility in Brahmans – one of the major profit drivers of northern herds – has the potential to yield significant gains.
- **Testing for hard-to-measure traits:** Work on producing more accurate information on eating quality, retail yield, net feed intake, feed efficiency and methane production are all contributing to the future success of the industry. One example is the poll gene test, considered an animal welfare breakthrough..

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Useful links:

BREEDPLAN: **breedplan.une.edu.au**

CashCow (improving beef fertility in northern Australia): **www.mla.com.au/cashcow**

Genetic selection – MateSel is a tool that enables breeders to optimise breeding outcomes by creating a suggested mating list based on a group of candidate sires and dams: **breedplan.une.edu.au/index.php?option=com_content&task=view&id=64**

More about LDL:
www.mintrac.net.au/docs/pdf/20152503_NT_VG.pdf

Research in action

Brian and Judy Pownall

"We have been applying the fundamentals of heredity to our beef herd for years.

However, it is only recently that we've 'ramped it up' by using more genetic selection tools, such as BREEDPLAN, to achieve our goal of producing steers for the feeder market with faster growth rates and quicker turn-off.

Historically, we bred animals for the Japanese ox market, but we feel faster turn-off times are more profitable. We now aim to breed 'flatbacks', turning off steers at 450kg liveweight.

We use Brangus bulls with low birth weight Estimated Breeding Values (EBVs) over our heifers, and it has reduced calving losses. We've recently infused Charbray bulls into our predominantly Droughtmaster herd to capture faster growth rates.

Sheep genetics

Super-charged sheep

There has never been more data available to producers looking for the right genetics. That data is turning out to be a powerful tool in progressing Australia's sheep industry. And in the future there will be even more data available.

Coming up

→ **More improvements** in calculating breeding values for reproductive traits that have low heritability but are important profit drivers.

→ **More values:** The main breeding value for reproduction is 'number of lambs weaned' and current developments are aimed at splitting this into its components of fertility, litter size and lamb survival.

→ **More data:** Sheep Genetics is gathering more data, including pregnancy scan information, to use in its evaluations.

→ **More genomic technologies,** such as using DNA sampling to increase the accuracy of breeding values for existing production traits, as well as new eating quality traits.

→ **More blended analysis for some traits:** Stage one of the single-step analysis, planned for release in May, combines that information in the same analysis for greater accuracy.

→ **More value chain feedback:** The launch of single-step analysis will coincide with the launch of the first indexes that include eating quality. These eating quality indexes have been developed with data gathered from MLA's Resource Flock and they will be further refined by abattoir feedback data as objective carcase measurement technology is developed and adopted.

We've also moved from a largely horned to a mostly polled herd by buying polled bulls that also satisfy other selection criteria, such as medium frame size, good temperament and strong maternal reproduction performance.

Selecting on temperament is important to us.

Quiet cattle do better and finish faster, while keeping everyone safer in the yards.

This year, we are focusing on bull selection and learning about using Bull Breeding Soundness Evaluations (BBSEs) to ensure bulls are fit to work.

We also want to learn more about using EBVs to select animals that will improve the fertility and growth rates of our herd."

Progress report

Sheep Genetics was launched in November 2005 as a joint project between MLA and Australian Wool Innovation.

Previously, MLA provided genetic evaluation for prime lamb breeds through LAMBPLAN and Merinos through Merino Genetic Services and several smaller evaluations.

MLA funded the Merino Validation Project from 2001-06, which engaged Merino ram breeders to collect data to strengthen evaluation of traditional traits and develop carcase and worm resistance breeding values.

Sheep Genetics has created one national evaluation system where all breeding values are calculated using the same methodology. The industry now has LAMBPLAN for prime lamb breeds and MERINOSELECT for the Merino industry. Sheep breeders are able to use the breeding values generated by these programs to make valid comparisons between animals.

Since the commencement of Sheep Genetics, the number of Merinos involved in evaluation has almost doubled and there has been an increase in the rate of genetic progress in the breed.

This is significant for the red meat industry, as a large proportion of slaughter lambs in Australia carry Merino genetics. Merinos now have better growth rates, fertility rates and fleece weights, and many breeders are selecting for carcase attributes as well.

Through programs such as Bred Well Fed Well, commercial producers have gained a good understanding of breeding values and, in many cases, their demand for more information has pushed ram breeders to adopt the technology.

Another development has been across-breed maternal sire analysis, which allows direct comparison of different maternal breeds. Prior to 2012, only across-breed terminal sire evaluation was available.

Producers are now better able to select individual rams to meet their ewe flock breeding objectives, irrespective of the ram's breed.

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Sheep and cattle productivity

In the driver's seat

Creating productivity gains in a sustainable manner is the goal underpinning all MLA-funded research and development. Productivity gains can be derived from both giant leaps and small steps and can come from every facet of a livestock enterprise.

Coming up

Weight watchers: The future will be characterised by innovations to overcome labour shortages and remote management issues. Walk over Weighing (WoW) units, already used for research, could be adapted for commercial use to provide real-time liveweight data. WoW could be matched with number-crunching software that predicts when individual animals or a herd are reaching weight targets, nearing calving or losing weight, and could be integrated with smartphone apps that send producers text messages to help guide management.

Precise pasture management: Research on the horizon includes real-time pasture biomass measurement, using automated optical sensors on beef and sheep properties in the temperate highland, temperate slopes and plains, and wet temperate zones of NSW, Victoria, Tasmania and WA. Coupled with seasonal forecasting tools and future price predictions, these technologies inform management decisions.

Condition scoring: One of the most significant projects is refining the principles of the Merino-based Lifetime Ewe Management program for non-Merino sheep. This will give non-Merino ewe producers more accurate information to manage the condition score of their flocks.

Critical mass: Another project is looking at the costs and benefits of feeding ewe lambs so they reach critical mating weight more quickly. The findings are being developed into a producer-friendly tool.

Reward for effort: Productivity gains are also expected from the combination of new carcase-measurement technologies and value-based pricing. These will provide producers with real-time, detailed carcase performance feedback to help inform breeding, management and marketing decisions. MLA will help producers learn how to use this information through a new national adoption program, as well as by developing data management systems.

Progress report

Stocking rates: An influential northern Australia project has been the long-term grazing trial at the Lyons family's Charters Towers property, 'Wambiana' (see more about this research on page 16).

Northern profit drivers: CashCow delivered useful data, benchmarks and insights about the productivity and performance of breeding herds in northern Australia. It identified opportunities for northern producers to turnaround poor reproductive performance by addressing factors that contribute to calf losses between pregnancy testing and weaning.

Management: More Beef from Pastures was developed by MLA in 2004 and more than 20,000 producers participated in its first five years, with 66% of those producers implementing management practice changes as a result, predominantly in pasture and grazing management. Increases in pasture utilisation were reported by 40% of producers who participated, 23% reported improved natural resource management and 10% reported the program contributed to increased profit. MLA also collaborated on programs such as Sustainable Grazing Systems, Grain & Graze, EverGraze and Pastures Australia.

Grazing strategies: MLA, with partners (including the Grains Research and Development Corporation and Australian Wool Innovation) co-funded the development of new plants, and management packages for legumes, temperate and tropical species to improve pasture management. Packages are supported by tools, which include the Feed Demand Calculator, the the Pasture Improvement Calculator (from EverGraze), and the Beef Specs tool – to assist ensuring market specs are realised.

Education: Making More From Sheep (MMFS) is MLA's key sheep extension program, a best-practice package of information, tools and learning opportunities that incorporate the latest R&D outcomes. MLA has collaborated with Australian Wool Innovation to deliver the program since 2008.

A 2014 report on the program's achievements included the results of case studies involving 47 producers who had attended MMFS events and reported an intention to implement a practice change as

a result of attending. The practice change evaluations showed an increase in average annual net income.

Bred Well Fed Well workshops are part of the MMFS program. 3,323 producers have participated since 2011.

A survey of attendees found the number using condition scoring practices on-farm increased by 50% following participation; the number of producers managing ewes to achieve condition score targets increased by 33%; and the number using Australian Sheep Breeding Values when purchasing rams increased by 44%.

Cooperating: MLA funded and participated in research with beef cooperative research centres 1, 2 and 3 (Beef CRC I, II and III*) and the CRC for Sheep Industry Innovation, which started in 2007.

The Sheep CRC works to shape and deliver a livestock research and development program with whole-of-industry benefits in the areas of wellbeing, productivity, quality-based sheepmeat value chains and faster affordable genetic gain.

Meat quality was the focus of the first phase of the Beef CRC 1. Beef CRC II addressed the issues of the trade offs for guaranteed eating quality, delivery pathways and DNA markers and Beef CRC III developed new genetic technologies to improve consumer satisfaction, reproductive performance, feed efficiency, adaptation and animal welfare.

* *Beef CRC I: CRC for the Cattle and Beef Industry (Meat Quality) 1994 to 1999; Beef CRC II: CRC for the Cattle and Beef Quality; Beef CRC III: CRC for the Beef Genetic Technologies.*

What will be the characteristics of the average sheep in 10 years' time?

Sheep will have higher reproduction rates, be quicker to reach market end point and will have improved eating quality and reduced mortality. They will be more resilient to their environment and have improved carcase value based on eating quality and meat yield.

The blueprint for breeders will be for growth rates greater than 500 grams/day, average marking rates of 150%, lean meat yield at 58% and intramuscular fat percentage greater than 5%. Part of the future will be ensuring lambs meet the requirements of the supply chain every time – having lambs that miss market specifications is a huge cost to the industry.

...and cattle?

Due to quicker finishing times, better temperament and nutrition, the 'typical' beast marketed today is younger, quieter and more market compliant than a decade ago.

There are plenty of exciting developments on the horizon, and the future industry could be characterised by cattle with 'programmed rumens' and remote management technology.

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Research in action

Michael Cobiac and Catherine Bell

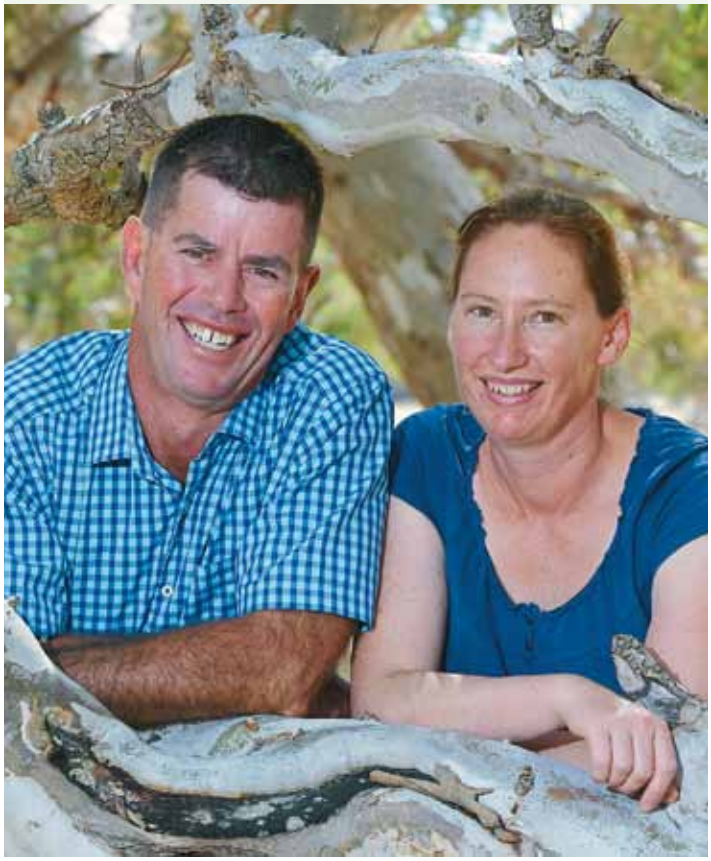
"Research and development influences every aspect of my business. We've drawn on the outcomes of R&D, sourced through programs such as Making More From Sheep and More Beef from Pastures to lift our three profit drivers: stocking rates, fertility and growth.

For example, I use pasture management R&D of different grazing techniques to manage pastures and assess quality and availability.

Based on livestock management courses, I have set grazing trigger points. I don't graze paddocks until there is 1,200–1,500kg/ha dry matter (DM) and I then manage stock numbers to maintain 1,500–2,500kg/ha DM as best as I can.

Research into fertility – specifically the relationship between levels of fat in the body and conception rates – to set body condition scores of 3 to 3.5 for breeding females throughout the year is also important. Similarly, selecting bulls with a superior genetic ability to maintain fat levels further increases the fertility of the breeding herd.

Live lambs are critical to our business, so lambing ease is an important selection criteria for terminal sires, as we run medium-framed ewes. I look for Estimated Breeding Values for calving ease, scrotal circumference and gestation length as drivers of fertility."



Animal welfare

An industry with welfare in mind

Australia's livestock industries have made great headway in enhancing the health and welfare of livestock in the past decade and more breakthroughs are about to be delivered.

Coming up

Research on pain relief and the replacement of adverse practices continues to be the focus of MLA and its partners.

MLA is working on a non-surgical alternative to castration and spaying, funded by the MLA Donor Company and intended to be delivered in the next decade.

More immediately, the sheep version of the cattle pain relief and anti-inflammatory drug, ILIUM® Buccalgesic OTM, for use during animal husbandry practices, is on the verge of commercial release.

One of the most exciting developments is the 'NumNuts' device, for sheep castration and tail docking.

MLA will continue to support the Sheep CRC and Invasive Animals CRC to further reduce stock mortalities.

Progress report

- **MLA's guide *Is it fit to load?*:** Producers, agents and processors all showed a strong commitment to this guide. MLA published more than 57,000 copies of the *'Is it fit to load?'* guide, which is – by far – the largest distribution of any MLA publication.
- **Best practice animal husbandry guides:** These cover establishing and explaining the best practice procedures for dehorning, branding and castration in cattle and sheep and managing cattle in low body condition.
- **Development of the poll gene test:** Available to all breeds with an accuracy of 98%, the test has provided an economic alternative to dehorning and has reduced mortalities.
- **Pain relief:** The commercial release of an easy-to-administer pain relief for calves, ILIUM® Buccalgesic OTM.
- **The Cattle Heat Load Toolbox:** A huge benefit to the feedlot industry, reducing mortalities from heat stress.
- **Livestock export welfare:** Australia has also had input into improving the livestock export trade, particularly conditions on ships, in feedlots and abattoirs. Australia has helped trading partners improve stock handling procedures, including the introduction of stunning and compliance with the World Organisation for Animal Health slaughter standards under the Exporter Supply Chain Assurance System. This work has had positive ramifications around the world.

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Useful links:

The Cattle Heat Load Toolbox:
chlt.katestone.com.au/rap-calculator

Download *Is It Fit to Load?* at:
www.mla.com.au/fittoload

Research in action

Brian and Judy Pownall

"Improving animal welfare on-farm goes hand-in-hand with building a better business.

We are using polled genetics to reduce the number of animals we need to dehorn.

We target polled bulls as much as we can and by continually introducing them to the herd we are now dehorning fewer than 10% of our calf drop.

Our staff and ourselves have all completed low-stress stock handling courses, which made a big difference to how our cattle handle and behave. This is supported by continued selection for temperament.

Animal comfort in the paddock is very important.

We make a concerted effort to control buffalo fly with back rubbers for all the mobs.

We don't want them unhappy, they only lose weight.

We also make sure the cattle have tree cover in all their paddocks, providing shade and shelter from the weather.

We are quick to react to seasonal conditions, with no qualms about destocking quickly to preserve feed, ground cover and animal body condition.

We prefer our breeders to be in body condition score 3+ before calving and our bulls in body condition score 4 before joining.

We also feed urea dry lick to help maintain condition and free-choice mineral supplements."

Animal health and biosecurity

In good health

Improving on-farm productivity as well as maintaining the industry's social license to operate over the past decade has been assisted by the development of products and best-practice management guidelines informed by MLA-funded research.

Coming up

→ **Johne's disease:** Future R&D will seek better information on the behaviour of different Johne's disease strains. Knowledge gaps also still exist in the diagnostic testing area. Current tests are used on pooled samples, but a test is required that can be easily applied to individual animals.

→ **Parasites:** MLA will also increase efforts to make adoption of integrated pest management strategies easier for producers. This will be a high priority, as the information is available but adoption rates have been limited. Investment in vaccines will continue, with MLA keen to develop the potential of host animals to act as their own defence mechanism against parasites and disease. The MLA Donor Company-funded project seeking to have BarberVax registered for use in goats will continue, while MLA will also look to invest in extending the efficacy claim of BarberVax to include the scour worms found in the majority of Australia's sheep-producing country.

Work will also be needed to find new controls for cattle tick, as more tick-susceptible, European genotype cattle make their way north. A vaccine is one possibility.

Hand-in-hand with pharmaceutical research will be a focus on genetics so producers may one day be able to select for parasitic resistance.

→ **Footrot:** R&D is expected to deliver a better diagnostic method within five years, with rapid molecular diagnosis replacing the onerous gelatin gel test for identifying virulent infections. Work is also underway to find a single vaccine that will provide protection against all strains of footrot.

Progress report

→ **Johne's disease:** MLA's single biggest investment in the animal health sphere has been for research into Johne's disease – totalling about $21 million over 16 years and involving more than 40 projects. The multi-pronged R&D strategy looked at Johne's disease behaviour, as well as tools for better diagnosis and management. Project outcomes included:

1. High-throughput Johne's polymerase chain reaction test, which is a molecular test that confirms a Johne's disease diagnosis within a few days, compared to 12 weeks using the traditional liquid culture method.
2. An alternative liquid culture medium for growing Johne's disease bacteria in the laboratory. Only one company provided the original medium and they decided to take it off the market. The new medium was developed in time to ensure uninterrupted provision of diagnostic services.
3. A vaccine was developed overseas, but MLA invested in field work to validate its efficacy, contributing to its registration for sheep (Gudair) and cattle (Silirium) in Australia. Research demonstrated that as the number of clinical cases declines, onset of clinical signs is delayed and bacterial shedding from infected sheep is diminished in vaccinated sheep flocks.

→ **Improved diagnosis of bovine anaemia:** Theileriosis, or bovine anaemia, is an emerging threat for Australia. The blood parasite *Theileria orientalis* has been in Australia for a century, but different strains can be benign or virulent and it has been difficult to identify in blood tests which strain is present. MLA supported the development of a molecular diagnostic method to distinguish between virulent and benign types of the parasite for more accurate assessment of the disease.

→ **Better frontline defence for bluetongue virus:** MLA helps protect Australia against bluetongue virus as one of the industry groups that supports the National Arbovirus Monitoring Program coordinated by Animal Health Australia. The program includes sentinel cattle herds and insect traps that are deployed across northern Australia and neighbouring countries to monitor the distribution of arboviruses (insect-borne viruses), such as bluetongue virus. However, examining trapped insects under a microscope and assessing if they are bluetongue virus vectors is labour intensive. MLA invested in the development of a molecular diagnostic test to assess DNA material from these traps and identify the insect species more quickly. The test is being rolled out and could, one day, replace the sentinel herd and microscope analysis.

→ **Control options for exotic pests:** The Old World screwworm fly is considered one of the most serious exotic insect pests threatening Australia's livestock industries, and is endemic in a number of our closest neighbouring countries. The fly is from the same family as the sheep blowfly and acts in a similar way, with female flies laying eggs in open wounds. MLA funded a project to assess chemicals currently registered in Australia to identify control options for Old World screwworm flies. →

Animal health and biosecurity

→ **Parasites:** MLA has also invested in R&D to develop recommendations for integrated pest management, rather than relying on chemicals alone to control internal parasites. R&D has shown using chemicals more judiciously by basing drenching decisions on worm egg counts and drench tests, and using pasture spelling and pasture rotation, provides effective control. MLA is a co-funder of ParaBoss, which unites the valuable extension and adoption programs WormBoss, LiceBoss and FlyBoss. MLA also funded efficacy work to support the Australian registration of BarberVax, the world-first barber's pole worm vaccine.

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Research in action

Michael Cobiac and Catherine Bell

"We have a low-risk approach to maintaining livestock health. Our 'prevention rather than cure' strategy covers bought and home-bred animals.

All livestock on the property are vaccinated annually against common infectious diseases.

We buy stock from certified vendors in low-risk environments and require health certificates and treatment histories. New animals are quarantined in yards and run on their own for a few months to prevent introducing parasites or diseases to the existing herd or flock.

The goal is to run a highly efficient enterprise with one labour unit, so reducing drenching is a priority.

I conduct faecal worm egg counts after the season breaks in autumn and spring to guide drenching decisions. I also remove persistently 'poor' animals from the flock or herd and rotate drenches each time. It is paying off and I only drenched once last year.

We've also eradicated lice from the property following a management plan I devised with the assistance of the MLA-supported LiceBoss program."

Labour efficiency

Work made easier

Doing more work with less labour is a goal shared by almost every livestock producer in Australia. While infrastructure improvements – such as more efficient yards – immediately come to mind, gains from a variety of research investments have also had an impact on labour efficiency.

Coming up

Time-saving tools: A calculator is in the pipeline for producers to determine the costs and benefits of on-farm labour-saving investments, such as laneways, auto-handlers, remote water-point monitoring and walk over weighing. The tool will use data drawn from 12 in-depth farm case studies.

Working dogs: A number of labour-saving R&D projects are in the works, including partnering with Rural Industries Research and Development Corporation on a national genetic evaluation project for working Kelpies, similar to BREEDPLAN and LAMBPLAN.

MLA co-funded research has found effective working dogs provide a return of up to five-fold on investment for owners through labour efficiencies. It also identified desirable traits when selecting working dogs and estimated their heritability, with some traits proving highly heritable – up to 40–50%.

The goal is for a national working dog genetic improvement program to begin by the end of this year.

Progress report

Genetics: Genetic improvement programs for the industry through Sheep Genetics have helped make significant progress in breeding for worm resistance, reduced wrinkle and bare breech.

Breeding more 'easy care' sheep has reduced the need for labour-intensive animal husbandry practices, such as drenching, mulesing and crutching.

The significant increases in the growth potential of sheep have lifted the capacity to finish lambs before grass seed set, removing the need to shear lambs before selling. Sheep breeders are also collecting data on traits such as dag score, which also relate to ease of management.

In the cattle industry, MLA's investment in the genetic improvement program BREEDPLAN has helped produce an Estimated Breeding Value (EBV) for docility. The docility EBV has been available for about 15 years and allows producers to select bulls for calm temperament, which means progeny can be handled more easily, more safely and more efficiently.

Lambing and calving-ease breeding values have also contributed significantly to labour savings, as well as having a strong animal welfare component.

Technology: MLA has funded projects and Producer Demonstration Sites to assess potential labour and cost savings associated with remote management technologies, such as using telemetry to monitor remote water points and pasture and receive data from walk over weighing equipment.

Tools: The ParaBoss suite of decision-support tools for sheep producers – funded by MLA and Australian Wool Innovation – has also produced labour efficiencies. For example, the *LiceBoss Treatment Guide* allows producers to enter data, such as mob history, length of wool, shearing date and chemicals, previously used to help them decide whether treatment is needed, potentially saving both time and money if intervention is not recommended.

Weeds: Integrated weed management is another MLA investment area that pays dividends for producers. Applying the right herbicide at the right time creates cost and labour efficiencies by avoiding the need to re-spray. MLA shares the principles of integrated weed management through a range of publications and events, including Making More From Sheep and More Beef from Pastures, Pasture Update events and Tips & Tools publications.

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Research in action

Colin and Anna Butcher

"Since 2012, we have been expanding our plantings of serradella – the last section of the farm will be planted this summer – which has increased labour efficiency on our farm.

We have reduced our labour units by about one full-time equivalent, because the highly productive pastures mean we no longer have to hand-feed our stock. 'Meals on wheels' is no longer a job on our farm, even in low-rainfall years.

For example, in 2015 we had a winter drought and some producers in our area began feeding stock in July. Others were feeding in mid-December because the spring rain was poor too. Thanks to the serradella pastures we didn't have to supplementary feed our sheep at all.

The only supplementary feeding we do these days is to finish lambs just before sale time in autumn. Last year, however, nearly all of them were finished on the serradella pastures.

The sheep are easy to shift into the serradella paddocks – for adjoining paddocks I just open the gate and they move themselves. We have a system of laneways, so sometimes I'll open the right gates and go back the next day to make sure they have shifted themselves.

The summer sowing technique creates cost savings and labour efficiencies by allowing us to plant the serradella in February, which is a quiet time of year.

Our move from Merinos to easy-care Dorper sheep, which we began in 2001, has also created labour efficiencies. As a shedding breed, the Dorpers do not need to be crutched, shorn or mulesed, and the White Dorpers are easy to work in the yards."

RESEARCH IN ACTION SPECIAL EDITION

Environment and climate variability

Methane mitigation

Reducing the methane output of livestock has been the focus of large-scale investment by industry and the Australian Government in recent years. Carbon emissions reduction research has been joined by a range of other environmental projects.

Coming up

Research will continue into new ways to increase productivity while lowering methane emissions from livestock, building on the National Livestock Methane Program (NLMP). This will focus on:

- **Native plant extracts:** Bioactive compounds extracted from native Australian plants have been found to reduce methane emissions by up to 97% in laboratory testing. It is estimated that these compounds provided as supplements under commercial conditions would more likely reduce emissions by 25%.
- **Rumen efficiency:** Still in its infancy, this project – based on work within the program – will identify new pathways in the rumen that can manipulate feed digestion, including a reduction of methane emissions, to increase the diversion of feed energy to meat, milk and wool products. NLMP scientists recently identified a new species of micro-organism responsible for a previously unknown biochemical pathway that produces methane in the rumen. They have also found the efficiency of this pathway is four times greater than other methane-producing pathways. Researchers are looking at ways of manipulating or even blocking this pathway through the development of a vaccine against methane-producing organisms in the rumen.
- **Carbon trading:** Producers have expressed interest in the Emissions Reduction Fund (ERF) and carbon emissions trading. Two ERF carbon trading auctions were held last year and about half of the Federal Government funds allocated over the next 7–10 years were contracted to red meat livestock producers (about $600 million). These projects are in the areas of vegetation (avoided deforestation, regeneration and soil carbon) and savanna burning.

Useful links:

Visit CliMate: **www.australianclimate.net.au**

Visit Climate Kelpie: **www.climatekelpie.com.au**

More on the Emissions Reduction Fund: **www.environment.gov.au/climate-change/emissions-reduction-fund**

The Beef Herd Management methodology was approved by the ERF in late 2015 and we will see producers investigating how they can combine productivity improvements with methane reductions to realise extra income from carbon trading.

Progress report

- **NLMP:** This was a $32.8 million program to provide producers with practical strategies to increase productivity and profitability while lowering methane emissions. It made important inroads in addressing agriculture's 10% share of Australia's total greenhouse gas emissions, of which methane from livestock makes up two-thirds. The program identified practices producers can adopt now. It recommended all breeding enterprises adopt best-practice management to increase growth rates of animals and reduce emissions by producing more kg of beef/ha.

Research in action

Brian and Judy Pownall

"We would like to leave our land in a better state than it was when we started - an enduring legacy for our children.

We are also mindful that a healthy environment brings benefits to biodiversity as well as to the bottom line.

We're trying to be as productive as possible while regenerating the landscape.

We've just signed up to CarbonLink, a program that is based on carbon sequestration through grazing management. It aims to support producers entering the carbon market.

We're just on the starting blocks with this and CarbonLink is still developing the project.

We fence to land class for ease of management of different land types and have invested heavily in water infrastructure so that stock travel no more than one kilometre to drink.

It's a win-win.

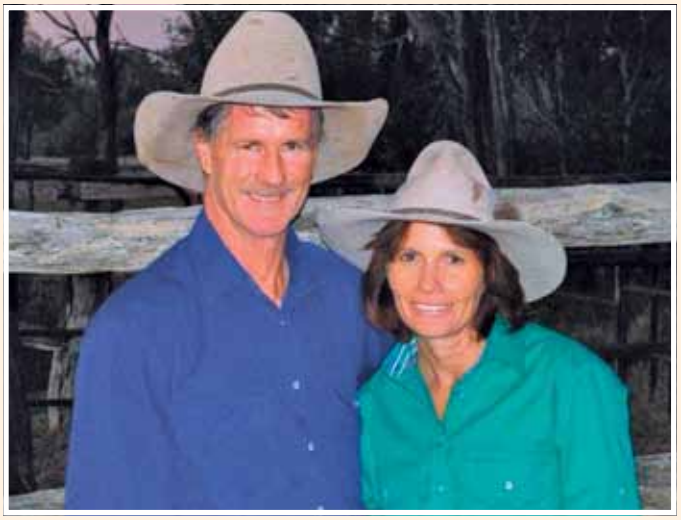
Stock are not stressed and losing weight from walking long distances and the ground isn't compacted and eroded.

Retention of groundcover is a high priority, with paddocks spelled for 60 days in the wet season and for 120 days in the dry.

Good groundcover reduces erosion and our rotational approach ensures pastures are kept close to their optimum quality.

Groundcover also encourages wildlife and healthy biodiversity.

We saw a goanna here the other day; we hadn't seen one in years. We like to think moments like that prove we're on the right track."



→ **Seasonal climate forecasting:** MLA has partnered with other industries in research on seasonal forecasting. The Bureau of Meteorology (BOM) had estimated that the accuracy of this by would improve by 10-15% during the next three years, due to collaboration with the UK Meteorology Office and the new 'super computer' purchased by the Australian Government. The research program has resulted in the water and land site on the BOM website and the development of CliMate, a free climate analysis app. Climate Kelpie, launched in 2010 and linked to Twitter, is designed to be a one-stop shop for climate-risk management information and tools for producers.

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Supply chain

Valuable partners

The red meat industry of the future will be characterised by closer partnerships between producers, processors and retail and foodservice customers to ensure products better meet market and consumer requirements and more value is created for all.

This is the prediction of MLA's General Manager Value Chain Innovation, Dr Christine Pitt, who suggested the sector is evolving to integrated value chains, where participants collaborate and share to ensure the premium quality and integrity of Australian beef, lamb and goatmeat.

"Historically, each segment, be it producer, transporter, processor, wholesaler, retailer or service provider, has tended to behave as an independent stage," she said.

"However, the increasingly complex global marketing environment – characterised by changing consumer demands and emerging competitors – requires a different business model to capture opportunity."

Christine oversees the MLA Donor Company (MDC), a subsidiary company of MLA, which enables voluntary contributions from local and international external organisations to be matched by Commonwealth funds to co-invest in R&D and innovation projects. While no producer levies are used in MDC projects, the outcomes deliver significant benefits across the whole industry.

"In the next five to 10 years, we can build capabilities across the sector to achieve high-value growth opportunities and ensure ongoing, strong demand for our product. This could be through deeper market and consumer insights, developing new technology platforms, refining industry integrity and traceability systems, or cultural change and innovation in the way we do business," Christine said.

Future investments will be targeted at technologies and innovations that support information exchange and better decision-making, improve labour efficiencies and worker safety, reduce wastage and environmental impact, increase product quality and appeal, and underpin food safety and product integrity.

Dr Christine Pitt, MLA
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Along the chain

Single ready-to-go meals for seniors, grab-'n-go hot roasts, innovative dry ageing methods for beef and pulled-meat products might not sound like something the average producer needs to know about ... but they could be some of the answers to building a strong, more resilient meat processing sector.

Here MLA's General Manager Value Chain Innovation, **Dr Christine Pitt**, shares her insights into the key areas impacting production post-farm gate, which she said affects producers by improving the overall value of a carcase, creating new markets and making processors more efficient.

Value chains

Coming up

Deep insights: An initiative aims to develop knowledge and market insights to inform more strategic innovation investment decisions. Ultimately it will identify innovation and support high-value growth to build demand in the Middle East and in emerging markets such as China, South-East Asia and growing market segments, such as the ageing population and snack foods.

Harnessing innovation: The integrity systems that will drive Australia's competitiveness rely on sophisticated technologies for information exchange. New digital tools could include apps for on-the-go access to integrity systems such as the National Livestock Identification System and e-learning tools. MLA Donor Company (MDC) investments will also support adoption of technologies, such as smart packaging, where active and intelligent materials can interface with surroundings and provide track-and-trace, and optimal shelf life solutions. Improved connectivity will facilitate adoption of new 'whole-of-chain' technologies and business model innovations.

New products: A key focus remains supporting the industry in creating value for secondary cuts and identifying opportunities to grow demand. In designing new products, sustainability, eating quality and shelf-life parameters from emerging packaging concepts are investigated, along with exploring new platforms such as milling of red meat, trialling 3D printing technology and developing sophisticated packaging. Working in partnership with supply chain companies, the MDC is also developing value-added products and trialling new technologies for vending machines and delicatessens through to meals for seniors, grab-'n-go hot roasts, dry aged beef methods, pulled meats and extrusion.

Mentoring future leaders: MDC will offer young food innovators traineeships to nurture emerging leaders.

Progress report

Building capability: MLA has worked with commercial enterprises through the Collaborative Innovation Strategies Partnership program to build the capability to support long-term growth and sustainability. Traditionally, this program has involved developing and implementing innovations such as value-added products, reduced water and energy consumption, and waste generation and automation technologies. Fifteen companies have been involved in the $36 million program since its inception in 2007. Independent reviews found significant benefits. One processor, who had 26 projects, integrated innovation to increase processing efficiency and environmental sustainability, which had a direct benefit of an estimated $24.4 million a year.

Processing

Coming up

DEXA: Dual-emission X-ray analysis (DEXA) was a significant technological breakthrough in 2014 and will pave the way for future objective processing. DEXA allows for precision cutting to maximise product value. The lamb scanning system has also demonstrated more accurate predictions for fat, meat and bone composition, which will provide objective yield measurements and eating quality predictors. Next is to further test DEXA and other prototype carcase measurement technologies on lambs from the MLA-managed National Resource Flock to refine measurements and methods.

Automation for beef: Automation developed in lamb processing will be adapted for beef. After considerable technical efforts to overcome carcase size, structural complexity, and variation (beef carcases can present with anywhere between 12 and 14 ribs and weigh from 100–900kg), a dual-energy X-ray system has been developed that reliably finds cutting lines between non-bone carcase features. In addition, the high-resolution images from DEXA may prove also to be suitable for meat yield grading.

Integrating sensing technologies: Advanced sensing technologies, such as near infrared spectroscopy and multi-energy X-ray imaging, will transform the objective assessment value in terms of meat yield, precise cutting lines and meat eating quality.

Progress report

Automation is an ongoing area of investment – of the $70.4 million MLA and co-investors have invested into processing innovations, around $58 million has been invested into automation. The focus is on automating specific tasks to save labour and increase value through more precise and consistent cutting.

Lamb processing: MDC partnered with New Zealand firm Scott Technology to deliver the LEAP™ suite of X-ray-guided automated lamb processing technologies. The LEAP lamb primal system separates carcases into shoulder, middle and hind, and increases the value of the carcase by between $1.30 and $1.40/head. The LEAP middle system breaks the rack barrel into various sub-primal components and increases the value of the carcase by between $3.20 and $4.20/head. The next step is to commercialise the LEAP V module – the lamb forequarter bone-in processing system.

Safety technologies: The MDC and Machinery Automation & Robotics have delivered a workplace health and safety technology called BladeStop™. It features a trip mechanism to stop a bandsaw blade in under 10 milliseconds if operator contact is made. Several serious injuries have now been avoided through successful operation of the technology.

www.mla.com.au/About-MLA/MLA-Donor-Company

RESEARCH IN ACTION SPECIAL EDITION

Market compliance

Setting the standard

Compliance with processor specifications and consumer requirements is essential to secure market share for Australian red meat.

And compliance has increased as producers have adopted tools and information and adjusted on-farm management practices to meet demand.

Coming up

→ **Strengthening Meat Standards Australia (MSA):** The MSA five-year plan outlines strategies to 2020, including: working with MSA brand owners to drive the integrity of the program; creating opportunities to use and add value to more cuts from MSA-graded carcases to meet the needs of global customers, with particular focus on non-loin cuts; and working with supply chains to support producers to meet company and MSA specifications and capture more value on-farm.

→ **Objective feedback:** The 'holy grail' of compliance is an industry-wide value-based pricing mechanism, but this relies on objective assessment of carcases for meat yield and eating quality. MLA, through the MLA Donor Company, is investing in technologies to objectively measure critical traits that will ultimately underpin value-based pricing. These technologies – such as DEXA, 3D cameras, hyper-spectral cameras and near-infrared probes – are being tested on commercially processed lambs from the MLA-managed National Resource Flock (NRF). The NRF is also being used to investigate the genetic potential of improving lean meat yield and eating quality in balance with other profitable traits such as growth. Five breeds of cattle in the Beef Information Nucleus are being assessed to determine genetic potential to increase yield and eating quality of beef.

→ **Change in practice:** Ten years ago, industry focused on productivity resulting from animal growth and carcase weight. This has changed to a more balanced approach including carcase traits such as marbling, meat colour and yield; key influences on management such as worm resistance; and birthweight and lambing ease. Looking ahead, the shift will continue to incorporate objective measurement of profitable traits as genetic improvement programs focus on market compliance. Compliance will become even more sophisticated, driven by criteria such as objective colour measurements, consistent cut size and consumer satisfaction.

Progress report

→ **MSA adoption:** Compliance with MSA specifications has remained relatively stable in recent years at around 93%, while uptake of MSA on-farm and by beef and lamb brands has increased.

In 2010–11, 1.3 million head of cattle were presented for MSA grading, this nearly tripled by 2014–15 to 3.22 million head. Hand-in-hand with this growth has been an increase in the over-the-hooks price difference between MSA-compliant cattle and non-MSA young cattle – up from 15¢/kg in 2010–11 to 33¢/kg hot standard carcase weight last financial year.

Adoption of the MSA program for lamb and sheepmeat has also grown, with 6.8 million lambs processed following MSA protocols in 2014–15, up from 800,000 in 2010–11. Of these, 3.5 million lambs were trademarked as MSA in 2014–15, up from one million in 2012–13. By the end of 2015, there were 115 beef and 16 lamb MSA-licensed brands, up from a total of 71 (beef and lamb) MSA-licensed brands in 2010.

→ **Tools:** Carcase feedback tools MyMSA and the MSA Index guide on-farm management and marketing decisions. The MSA Index, launched in 2014, provides a reliable predictor of the eating quality of any beef carcase, from any region in Australia, solely influenced by factors within the producer's control.

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Market information

Extra, extra ... read, watch and hear all about it

Gone are the days when media deadlines dictate when producers receive their market information. Now, more than ever, producers are in control of when and where they get their information. MLA Manager Market Information Ben Thomas shares that in the future, this control will move beyond when and where – to what information is received.

"The market information area will see more change in the next few years than in the past 20, thanks to technology," Ben said.

Internet and mobile technology means saleyards reports are distributed more quickly, while in-depth industry projections can be provided more often.

"Our policy is that National Livestock Reporting Service saleyard reports are finalised and published online within one hour of the sale being complete," Ben said.

"Our ability to distribute market information much more cost effectively via the internet means that we've also been able to move from distributing industry projections on an annual basis to bi-annual and now to quarterly.

"Rather than one massive document sent out at the start of the year, we now provide smaller quarterly reports that take into account the impact of changing variables such as currency forecasts, weather and market access conditions."

As well as using email and the website, some components of the projections are distributed through social media, such as Twitter and YouTube. The four YouTube videos produced in 2015 have each exceeded 2,500 views.

Producers appear to be embracing the modern reporting methods, with a three-fold increase in the amount of online traffic generated by the market information section of the website between 2010 and 2015. The number of unique page views rose from 450,000 in 2010–11 to 1.5 million in 2014–15.

There have also been 11,000 downloads of MLA's market information mobile app, launched in 2014.

"Just 15 years ago, most producers could only receive their market information by ringing their agent at night, waiting for the weekly rural newspapers or being in the right place to listen to the 'Country Hour'.

"This meant the information was sometimes delayed and did not support timely decision-making. For example, most of the regional newspapers are published on Thursday. If you sold stock on Friday, you may not have known how your stock performed relative to other categories until the following Thursday."

Here are some developments livestock producers can look forward to in the market information sphere:

MLA's market information mobile app – Phase 2

Phase 2 of the market information mobile app will be launched this year and will allow producers to create their own tailored market indicators.

"We'll still provide the generic indicators, such as the Eastern Young Cattle Indicator, but producers will also be able to tailor their own," Ben said.

"For example, if you're a feeder cattle producer in the Riverina, you can select the saleyards that we report on in the Riverina as well as feeder cattle purchases for a particular weight range. This allows you to see the trends for that category of cattle in your region."

Beef language review

Australia's AUS-MEAT language was developed in the 1960s to provide a standard national language for describing meat and livestock. While the language has stayed the same, developments in genetics and new marketing systems mean the animals and the trading landscape has changed.

A draft paper was released in December last year and following industry feedback, a scientifically based White Paper was released this year. The White Paper considers potential descriptors that are more responsive to developments in science and technology, markets and market constraints and the changing wants and needs of customers and consumers.

Livestock Data Link

Livestock Data Link (LDL) aims to transform the way carcase feedback data is presented to producers by linking slaughter data from the National Livestock Identification System and Meat Standards Australia databases with analytical tools, benchmarking reports and the online Solutions to Feedback library. Read more about LDL on page 9.

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International marketing

Meet the consumer of 2025

Feedback asked five of MLA's International Business Managers to share their thoughts on what the consumer of 2025 might look like in a selection of key and developing markets, and how Australia's red meat industry could potentially reach these future customers.

China
Michael Finucan

What might the consumer of 2025 look like?

China's middle class is growing, but the urban-based upper-middle class is the key audience. This affluent group makes up 17% (or 44-million people) of China's urban population and is expected to grow to 62% – 224 million people – by 2022. The under 35s are the ones to watch – they are willing to spend more, are better educated, well-travelled and brand conscious. Their demands are food safety, convenience and reliable quality. Importantly, this group wants to engage with brands that reflect their lifestyle, values and personality. Mobile e-commerce shopping will continue to increase, driving retail growth.

How can Australia's red meat industry reach these future consumers?

MLA is conducting a detailed research project, Market Insights to Drive Food Value Chain Innovation & Growth, under the Australian Government's Rural Research and Development for Profit Programme. It will equip the industry with the tools and insights to target key Chinese consumer segments and maximise the opportunities in this market.

South Korea
Michael Finucan

What might the consumer of 2025 look like?

Currently, 50% of imported Australian beef in Korea is bought through retail, primarily by housewives aged 30–50. Although the Korean population has stagnated and the population is ageing, middle-aged females are expected to remain the main purchasers of beef in the next decade. Younger people are still important and, with the growth of single-occupant households, and their desire to have simple easy and convenient meal solutions, we could see the ongoing trend of innovative single-serve meals. Consumers will demand safe food and will look beyond the traditional 'mark of quality' or marbling for lean, healthy alternatives.

How can Australia's red meat industry reach these future consumers?

Australia has a long-standing position as a reliable supplier of safe and trusted beef in Korea. MLA will continue to leverage off this and support trade partners, targeting emerging consumers with solutions, whether that be promoting leaner grassfed beef or meal solutions for the young, single-occupant households.

South-East Asia
Andrew Simpson

What might the consumer of 2025 look like?

Red meat will remain a luxury item compared to low-cost proteins, such as pork and chicken, and rising competition from Indian buffalo meat. Australian red meat must continue to define its point of difference as sustainable and innovative to secure niche high-end markets. Growing urbanisation in Indonesia, the Philippines and Vietnam will contribute to a young consumer sector, with more than 70% of urban consumers aged under 35. Modern retail is replacing traditional markets, along with demand for greater supply-chain integrity. Emerging economies will see an 'aspirational consumer' of 2025, who seeks a sustainable, convenient, fresh and price-competitive product. This group's expected demands include healthy food options and smartphone technology for food delivery.

How can Australia's red meat industry reach these future consumers?

Connectivity through social media, with messages on health, wellbeing and a balanced diet, will remain the most cost-effective and efficient means of reaching the mass consumer market. Online sales in South-East Asia are expected to increase from less than 15% to more than 40% in the next 10 years. The challenge for Australia will be to target demographics that will pay the premium for our story and our product. In emerging Asia, this will be specific cities with the required retail and logistical infrastructure. Greater investment in packaging and portion size will target premium markets focused on quality and convenience.

Japan
Andrew Cox

United States
David Pietsch

Middle East/North Africa
David Beatty

What might the consumer of 2025 look like?

Around 25% of Japan's population is already aged over 65, and this is projected to hit 40% by 2060 (the current global average is 9%). These older consumers, as veterans of the economic boom times, have significant levels of disposable income. An opportunity will be to communicate specific health benefits to relevant market segments, such as the ageing population (protein) and working women (iron). Technology and packaging will also need to respond to this demographic by delivering single-serve meals and convenient packaging with easy-to-read labels. Another important market segment is working families, who lack both time and skills to cook traditional meals.

There is no typical 'US consumer'. Rather, there is a variety of demographic segments with unique food demands and desires. A significant segment will be younger, more health conscious and affluent, but also time-poor and prepared to splurge. There will be more males cooking, more sharing of meals and, while eating out in the US will remain common, there is potential for more experimentation and entertaining in the home. Some segments will spend more of their household income on food and travel, but others will continue to favour low-cost proteins and vegetable-based solutions, due to price, perceived health and sustainability benefits, convenience and flexibility. Beef and lamb will need to inspire with provenance, quality and innovative preparations. There will be continued demand growth for attributes such as no added hormones, grassfed, free-range, GMO-free and sustainably raised. More of these products will move into the mainstream, challenging current premiums.

Arab nations will be more westernised and open to global influences. Attempts to diversify economic growth to sectors outside of oil and gas, along with regional plans to reduce reliance on 'expat' labour will result in more educated populations with an increasing middle class. Future consumers will be driven by sustainability, food safety and security. Modern retail and convenience, express and deli-type buying and online shopping and home delivery will have largely replaced local wet markets. Australian red meat must continue to be recognised as clean, safe and Halal-managed.

How can Australia's red meat industry reach these future consumers?

Japanese consumers are among the largest users of digital media and online retail sites. This social separation means it is increasingly vital for us to partner with retail and foodservice companies to talk to consumers one-to-one (either digital or in-store). Population density in centres such as Tokyo (37 million people) and Osaka (19 million) will remain high, so creative thinking is needed to reach future consumers.

Digital and experiential marketing activities, including responsive home delivery and innovative public events, will be important to connect with certain segments. The traditional grocery store format will continue to be challenged by smaller market-type stores offering experiences such as in-store meals and music, as the line between restaurants and grocery stores continues to blur. Conversely, but in parallel, home-delivery services will increase to cater to the needs of affluent, but time-poor, consumers who value family and leisure time. Producers and supply chains will integrate more, specialise more, brand more and engage more, all while increasing quality and consistency and controlling costs and prices. It's a challenging prospect!

Australia's long-term commitment to the Middle East/North Africa region has created a trusted brand representing a source of safe, clean and Halal red meat. Consumers from diverse cultural and socioeconomic backgrounds should continue to be educated on quality and have this linked to food safety and security. Middle East/North Africa consumers are traditionally social and hospitable, with eating out and in the home involving large family groups. These social aspects, combined with a challenging climatic environment, will result in a population reliant on social and digital media. Targeting these platforms will provide the greatest opportunities.

www.mla.com.au/Marketing-beef-and-lamb/International-markets
Keep up to date with regular videos from MLA's International Business Managers at: **www.youtube.com/user/meatandlivestock**

Domestic marketing

Brand power

Social media. Digital television. Blogs.

MLA Group Marketing Manager Andrew Howie shares how these new ways of communicating and connecting with consumers are changing the way MLA promotes red meat.

When MLA first promoted the value of iron in women's diets in the 1990s, it was a simple strategy. MLA bought television time and people watched the ads.

Marketing has since become more sophisticated. The new generation of consumers are tech-savvy, highly mobile, and influenced by pop culture and web celebrities, such as bloggers and Instagrammers.

Andrew said media fragmentation meant consumers were harder to reach.

"In 1990, there were only five TV channels. Now, there are more than 150," he said.

"The internet did not exist in 1990, but around 80% of Australian households today have internet access."

There were also no smartphones or tablets in those days, but 73% of Australian households had smartphones and 47% had tablets by 2015.

Traditional marketing avenues such as cinemas, radios and consumer magazines have expanded, and the rise of online influencers have added to the complexities of modern marketing.

MLA has adapted to this changing environment by having a flexible approach to marketing with consistent messages.

For example, in response to the rising popularity of cooking shows, MLA developed the six-part 'Dinner Project' for Pay TV in 2014. The campaign evolved to become the 18-part YouTube series, 'Dinner Three Ways'. The next phase, still in development, will be tailored to the 'short and snappy' nature of digital content platforms.

Dealing with diversity

"The family unit is a key focus for MLA's nutritional message, which is aimed at time-poor parents whose oldest child is a teenager, as well as 'start-up' families with children aged under six," Andrew said.

"We also develop content to target other important consumer groups such as men, singles and teenage girls."

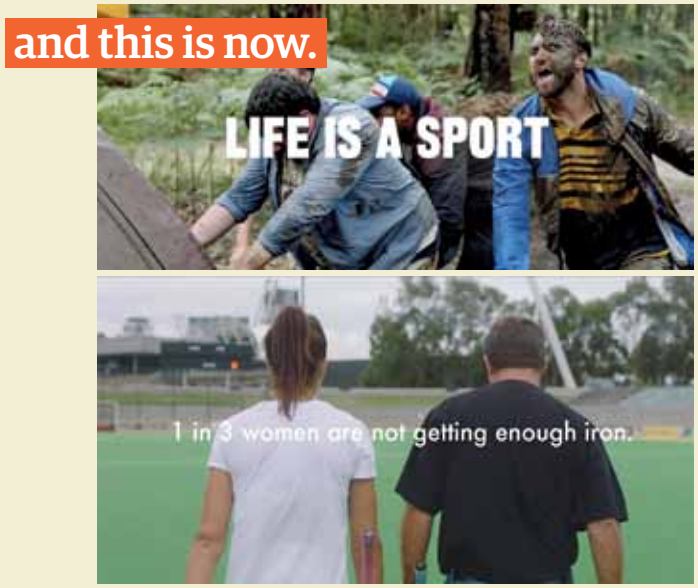
The teen market is critical, as today's young women haven't been exposed to the iron message and one-in-three women are still not getting enough iron from their diet. This market is made up of teenagers who may be vulnerable to social peer pressure from movements such as veganism and Meat-free Monday.

MLA's modern version of the iron campaign – part of the broader 'You're Better on Beef' marketing strategy – used creative marketing channels such as digital billboards, partnerships with Fitness First gyms and the women's network Mamamia, Facebook and Instagram. The campaign reached 75% of the target audience (women aged 18–29) at least once, which equates to 1.4 million people.

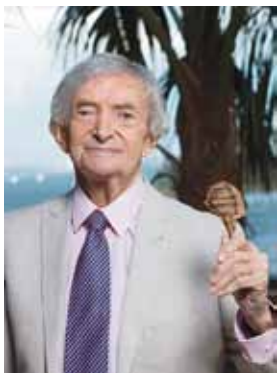
Consistent messaging

MLA develops individual campaigns to reflect consumer trends, while using consistent messages and branding to ensure beef and lamb are seen in the crowded marketing space.

For example, although baby boomers are the traditional consumers of lamb, MLA's 'You Never Lamb Alone' (shown opposite, top) message has evolved to remain relevant to new groups of Australian consumers. This includes Asian and Middle Eastern consumers who – unlike the baby boomers – did not grow up eating a traditional Sunday lamb roast. MLA's campaign positions lamb as playing an important role in assimilating into the Australian way of life.



Above: Clips from the 'You're Better on Beef' and 'Conquering your Fear' campaigns.



MLA also partners with media to add scale, such as by leveraging the late Ritchie Benaud's links with Channel Nine to add value to the 2015 Australia Day lamb campaign, and partnering with Nova Radio to maximise exposure from Lee Lin Chin's appearance in this year's campaign. There was a return of $2.75 (in sales and media coverage) for every $1 spent on the 2015 Australia Day lamb campaign.

What's on the cards for future MLA marketing?

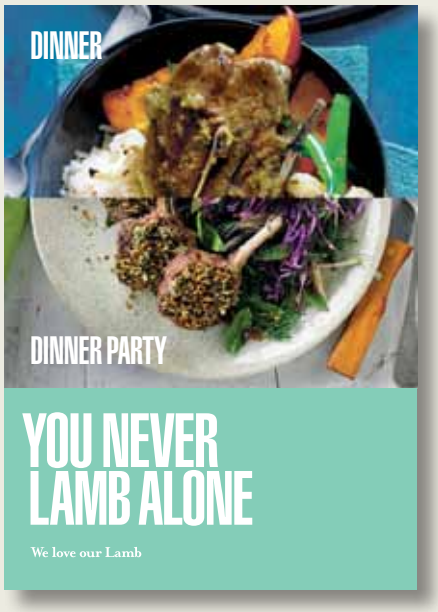
Andrew promises 'nimble' projects that offer production value from small budgets, campaigns that reflect the bite-sized nature of digital content, and a consistent strategy built on robust insights and delivered in engaging ways.

"We know our competitors are spending big at the moment. We need to ensure that we don't get drowned out," he said.

"Beyond that, we need to ensure our message about red meat continues to be delivered in ways that consumers want to engage with. By creating campaigns that get people talking, we ensure that we receive value beyond just the dollars spent. And people will continue to love our brands: beef and lamb."

(Media fragmentation figures from Roy Morgan/Magna Global)

Andrew Howie, MLA
E: ahowie@mla.com.au



Brand recognition

Have you noticed that MLA's red meat ads tend to feature the same cuts – lamb cutlets and beef rib eye? Without the luxury of unique logos or packaging features, such as Coke's distinct bottle shape or Cadbury's purple packaging, specific cuts are consistently used to create a 'brand asset' for red meat that consumers can quickly recognise. Other cuts, especially secondary cuts, would not be as easily recognisable so MLA puts these on the menu through supporting point-of-sale recipe cards.

Brisbane//Beef industry breakfast

Industry leaders, producers and stakeholders were brought up-to-date on the challenges and opportunities presented by the Australian Government's Emissions Reduction Fund (ERF) by Dr Tom Davison, MLA Manager Sustainable Feedbase (pictured below).

Tom's key points included:

- There were opportunities for livestock enterprises to increase productivity while making additional income from lowering emissions. Those with the lowest productivity currently potentially have the most to gain.
- Livestock producers were successful in securing around $600 million in contracts in the first two reversed auctions of the ERF for projects such as controlled human-induced regeneration, savannah burning, avoided deforestation and soil carbon sequestration.
- More ERF-approved methods for emissions abatement were likely to come online, offering opportunities for beef and sheep enterprises, either individually or through aggregation.

Dr Tom Davison, MLA
E: tdavison@mla.com.au
Find out more at: **www.environment.gov.au/climate-change/emissions-reduction-fund**

Sydney//IBM visit

General Manager International Markets and International Business for China and South Korea Michael Finucan was interviewed by the media while in Australia recently.

MLA's International Business Managers returned to Australia recently from their overseas offices to meet with Peak Industry Councils and producers.

MLA has managers on the ground covering markets including China, North America, southern Asia, Middle East/North Africa, South Korea, Japan, Europe and Russia. By living 'in market' the managers are uniquely placed to provide market information, identify opportunities and help grow demand for Australian red meat exports.

The visit was an opportunity for the managers to provide a global outlook for Australia's red meat in the coming 12 months, a snapshot of the current situation, the opportunities and challenges within markets and explain how MLA is ensuring it maximises those opportunities.

Read some of the media coverage from their trip at: **www.mla.com.au/reportingback**

Upcoming events

Find more events and information: **www.mla.com.au/events**

Nutrition EDGE

The MLA-dveloped Nutrition EDGE course is tailored to your conditions and enterprise management. It is designed to equip you to make decisions to ultimately help to achieve your herd performance targets through improved breeder fertility, weight gains, optimal use of supplements and overall management.

The workshop will discuss the nutritional requirements of cattle, estimating the feed value of pasture and of animal production, what supplements to feed, understanding a feed label, saving money on supplementary and drought feeding and making better management decisions for a range of seasonal conditions.

When and where:
10-12 May: Emerald, Qld.

Bookings and more information: Monto: Désirée Jackson, M: 0409 062 692 // E: desireejackson@bigpond.com
Emerald: Byrony Daniels // T: 07 4983 7467
E: byrony.daniels@daf.qld.gov.au

Beef Marketing & Meat Quality workshops: How good is your beef?

These events will cover:
- The latest market info and trends – Ben Thomas (MLA)
- MSA Index – Making it work for you! – Jarrod Lees (MLA)
- Internet tools to help you get better value for your beef – Jeisane Accioly (AgInnovate)
- The latest on dark cutting research – Peter McGilchrist (Murdoch University)
- Making it work on-farm – Michael Wilkes (Adelaide University)

When and where:
- 27 April, Mt. Barker, WA
- 28 April, Manjimup, WA
- 29 April, Harvey, WA

All days are 8am – 2pm. Each event includes morning tea/lunch and workbook and costs $50/person.

Bookings and more information: Jeisane Accioly
M: 0403 327 216 or E: jeisane@aginnovate.com.au

Recipe

A taste enticer

Here's a new take on mince from the latest edition of MLA's *Entice* magazine. More than 1.2 million copies of *Entice* Summer 2016 were distributed to butchers and retailers across Australia for them to share with their customers.

If you missed out, check it out online at: www.beefandlamb.com.au/How_to/Online_magazines

Vietnamese-style meatball sandwich

Serves: 4
Preparation time: 30 minutes
Cooking time: 10 minutes

Ingredients

Meatballs

500g beef mince

2 cloves garlic, crushed

1 tablespoon sri racha chilli sauce (optional)

1 bunch coriander, root and stems, finely chopped

1 tablespoon sunflower oil

Pickled carrot

1 carrot, peeled lengthways into ribbons

1 tablespoon white vinegar

½ teaspoon salt

Salad

1 cucumber, sliced lengthways into long batons

2 roma tomatoes, sliced

Coriander sprigs, to serve

4 long bread rolls, split along the top

Sri racha chilli sauce, to serve

Method

1. Place mince, garlic, sri racha and coriander root and stems in a large bowl with ½ teaspoon salt and mix to combine, using clean hands. Roll a heaped tablespoon of mince mixture into a meatball. Repeat to make 16 meatballs.
2. Place 3-4 meatballs per skewer, brush with oil and cook on a BBQ, grill pan or large non-stick frypan over medium heat until cooked through.
3. To pickle carrot, place carrot ribbons in a bowl with vinegar and salt and toss to combine, leave to pickle for 10 minutes, then drain.
4. Place a little salad and coriander in each roll, top with meatballs removed from the skewers and drizzle with sri racha sauce to serve.

lambex 2016

AUGUST 10-12

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