



final report

Project code: P.PSH.1005

Prepared by: Patrick Youil, François Tabbakh
Ready Retail Operations Australia Pty Ltd

Date published: 30 May 2020

PUBLISHED BY
Meat and Livestock Australia Limited
PO Box 1961
NORTH SYDNEY NSW 2059

Evaluation of red meat in vacuum skin packed on board retail ready format

This is an MLA Donor Company funded project.

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government to support the research and development detailed in this publication.

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Executive summary

Vacuum Sealed Packaging (VSP) offers considerable advantages over the traditional Modified Atmosphere Packaging (MAP) format when considering fresh meat products. The use of VSP on various retail products has grown in popularity in Australia over the past few years and it is expected this trend will continue to grow for fresh red meat products.

The European market has already adopted many variations of this format for a wide range of fresh meat products and the technology developments by many equipment manufacturers in the field now offer VSP options which can enhance product presentation and consumer experience.

This project evaluated VSP on paper board, a new case ready packaging format for red meat. VSP on plastic tray format has been present for some time in the Australian market, however fresh red meat products have yet to be offered in VSP on paper board format in Australia.

Through product development and commercial trials, the project assessed the operational, merchandising, eating profile and consumer attitudinal behaviour this format could deliver to create and capture value to the Australian red meat industry.

Key outcomes from this project build upon the preliminary Meat Standards Australia (MSA) study in comparing various case ready formats (VSP, Hi-oxygen MAP) on eating quality. Voice of customer input into sensory profiles, storage, handling (including easy opening ability), sustainability, meat colour, use by date marking etc is also considered for willingness of consumers to pay a premium for this packaging.

Coles RROA partnered with SealedAir Australia who leased RROA a Mondini Trave 340 sealer for the development and trial launch of four existing red meat products in the paper board VSP format. Mondini has registered the name “Slimfresh” to define the VSP on recyclable cardboard format produced on their Trave tray sealing Platform technology. Expectations were that Slimfresh packs will deliver increased shelf life of red meat portions to 30+ days compared to 10 days with current MAP packaging enabling wider distribution and that the materials can deliver a 20-35% reduction in waste film compared to traditional thermoforming packs.

Installation and commissioning of the Trave tray sealer in a live production environment allowed the multi-disciplinary interdepartmental team to develop all aspects of the new product including selection of product range, packaging materials, design of process flow and artwork from concept to final design. This then enabled the commercial launch of a totally new format into select Coles stores where selected products were substituted for the new pack format. This was maintained for a period of just over four months to ascertain feedback from consumers. During this period observations and valuable insights were gained into the benefits and challenges related to production, quality, shelf life, impacts to supply chain, customer feedback, and sales uplift.

The insights and data gathered over the course of the project were used to develop a feasibility and cost benefit analysis. The key learnings generated in this project will benefit the Australian red meat industry by supporting innovation and improving the value of the offering to consumers.

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1 Background

The meat case in Australia has seen little innovation and has resulted in a mostly standard Modified Atmosphere Packaging (MAP) offering with very limited options. The MAP format has known limitations, in particular shelf life which ranges between 8 and 11 days from day of portioning. Such limited shelf life is a daily challenge to the supply chain and limits the opportunity to extend distribution to distant regional areas and export markets.

The use of new Vacuum Sealed Packaging (VSP) for fresh red meat products could be a key strategic innovation. The new format extends shelf life whilst enhancing shelf visibility for local and regional supermarkets as well as enable export market opportunities for retail ready meat into Asian supermarkets. Initial discussions with a number of Asian supermarkets have indicated strong interest in Australian packaged red meat products in this format. Coles Retail Ready Operations is well placed to service Asian exports through the recently acquired export accreditation.

VSP format is currently being produced on plastic trays, however these can only be displayed in the meat case horizontally and are usually piled upon each other reducing shelf presence and customer appeal. The proposed packaging concept will enhance shelf presence and allow the product to be vertically presented enabling more facings at eye level featuring colourful packaging.

2 Project objectives

The overall project objective is to understand the opportunity for “Slimfresh” in terms of product – market fit desirability, commercial viability and technical feasibility.

This work will identify what are the key value proposition(s) for adopting Slimfresh, specifically:

- What is the bundle of products, packaging and services that should be offered?
- How and what value gets delivered?
- Who is the target market(s)? Validating an ability and willingness to change for this new offer?
- What is the created value (demand and operational cost savings) captured by the Australian red meat industry?

The specific project objectives were:

1. Commission and test new Mondini Platformer technology (first in Australia) to produce “Slimfresh” packs – including material selection, yields and handling throughout meat supply chain from case ready site to in-home simulation. Validate Food safety using the new board format in typical fresh meat applications and supply chain.
2. Discover and develop value proposition for Slimfresh including:
 - Domestic Coles supermarkets and Coles Express stores
 - Asian export markets
 - Sustainability driver to message to consumers (reduced waste in terms of film and less dumps and clearances in store)

3. Take advantage of new pack format to utilise further branding, recipes, and consumer information about the cut of meat to support consumer awareness for “locked in freshness, aged in the pack”.

3 Methodology

3.1 Product development

An initial phase of testing on small scale packaging equipment and various packaging material option enabled development of the new product concept in terms of red meat cuts and packaging format details. Market research was also used to evaluate consumer response and perception of the new product.

3.1.1 Concept design

With input from Coles Group Red Meat Managers red meat products were selected for evaluation in the new format. It is expected that premium cuts such as scotch and eye fillet steaks have attributes with the best potential to benefit from presentation in on board VSP format.

3.1.2 Packaging design and material selection

Export and local market trials were performed to evaluate performance through the supply chain and shelf life. Different packaging material options were tested and selection of the base board and top film finalised. The evaluated packaging material attributes included:

- Appearance of print on the board
- No curl/ warping from sealing or exposure to humidity
- Film/board seal ability
- Easy opening (separation of the film from the board)

3.1.3 Consumer market research

Consumer research was undertaken to understand the consumers’ sentiment to red meat packaged as the current MAP format, the plastic tray VSP, and Slimfresh (paper board VSP).

Over half of the respondents preferred MAP for its fresh looking meat, nice colour of meat and ease of opening. One third of respondents preferred Slim Fresh for its nice packaging and ease to open. Of the small proportion of respondents who preferred VSP, this was for the meat looking fresh and air tight seal.

3.2 Machine setup for production

Experience, knowhow, and data acquired during the initial phase of trials was then used to further develop the packaging design, equipment setup, and production flow to enable the product to be commercially launched into select stores. One of the main objectives of the project, and reason for the commercial launch, is to gather sales data and consumer feedback on the new packaging format.

The Mondini Trave 340 tray sealer was installed in the red meat production room, adjacent to existing packaging equipment. This location was selected to stream line product flow from cutting tables to the packaging stage (Refer to Photo 1).



Photo 1: Mondini Trave 340 at Coles RROA

3.3 Production Start-up for Commercial Launch

Despite trial runs in earlier phases, some minor issues were encountered in ramping up production to support the commercial launch. Full time technical support from the equipment vendor (Sealed Air) during the first two weeks ensured on time delivery of store orders. During this period, operator skills were further developed, and a better understanding of the machine operating parameters acquired.

Once the initial technical challenges had been overcome through a better understanding of the equipment operation, the production rate and quality of the packs gained much reliability. Despite these initial challenges, it has proven fit for purpose on this limited launch.

3.4 Performance through the supply chain

The effects of the new packaging format on the rest of the supply chain have also been evaluated.

3.4.1 Productivity

In comparison to other production lines, some productivity limitations were observed during the production runs. These are attributed to the small tray sealer's capacity, for example the dual head at a maximum of 10 cycles per minute limits throughput to low production volumes. Such limitations

are however not expected to be found in larger machines is adequately selected to match the site's production targets.

3.4.2 Labelling

In the production process, the main challenge has been the label application. Due to inevitable creasing of the top film during the sealing process, there is no consistently flat space on the pack for effective automatic labelling. Labels have had to be applied manually to the packs.

3.4.3 Packaging yield

Packaging material yields are also much higher in comparison to MAP and VSP production lines. This is largely attributed to the fact that the machine uses premade boards which do not require cutting or trimming. This feature may not necessarily be retained when scaling up as roll stock of base board may be preferred.

3.4.4 Compact design

As expected, the compact design of the slimfresh packs makes better use of transport space compared to MAP products. This also benefits stores where displays and facings can be maximised.

3.4.5 Shelf life

Additional to the shelf life validation performed for the four new products, a comparison was done on the shelf life of beef scotch fillet in MAP, plastic tray VSP, and paper board VSP (Slimfresh).

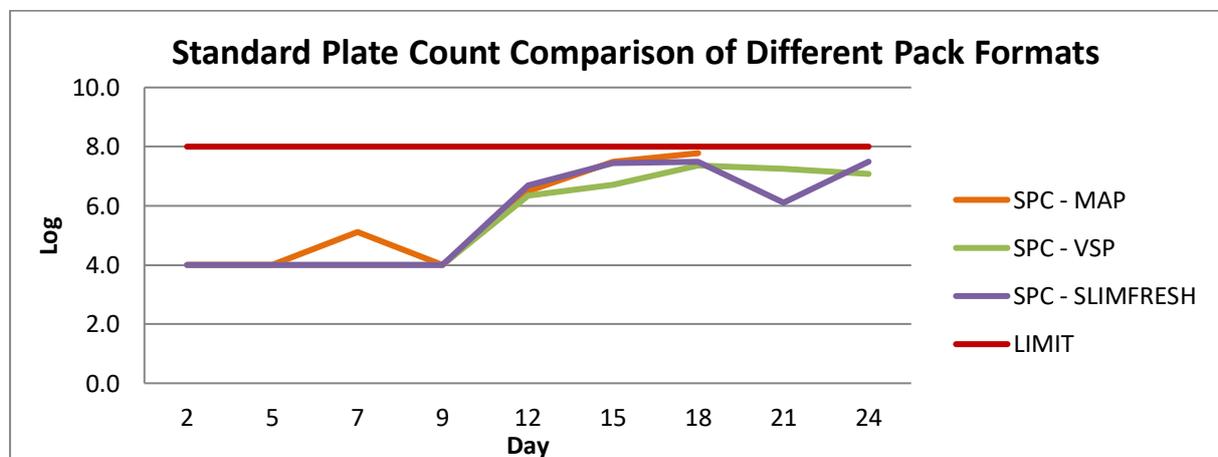


Figure 1: Plate count graph

On both the current plastic tray VSP and Slimfresh, micro was amber on day 24, the last day of testing. MAP micro was amber on Day 12 and then red on Day 15. Slimfresh performed slightly better in terms of sensory parameters, obtaining a green rating up to the last day of testing.

The standard shelf for this product in MAP is 9 days, whereas the declared shelf life for the new paper board VSP products is 16 days.

3.5 Instore trial

The product was launched into 20 NSW stores on August 19th, 2019. Stores were informed ahead of time that the “Graze” range would be transferred from the plastic VSP to Slimfresh packaging (See Photo 2).



Photo 2: In store presentation of Slimfresh product

Store feedback has been positive with no reported issues on product transportation, handling, or presentation.

3.6 Scope of Consumer Feedback Study

A consulting firm specialised in consumer research was engaged to gather consumer feedback following the launch of the new packaging format. The study targeted the following focus areas:

3.6.1 Explore spontaneous awareness of new packaging format

- Spontaneously, have customers noticed any changes to meat trays?
- If so, what have they noticed?
- How, if at all, has it impacted on their perceptions of quality / freshness / behaviour?
- Gauge the number of shoppers who have noticed the move to Slim Fresh

3.6.2 Prompted evaluation of new packaging format, first impressions and perceptions

- When shown (if not already aware), how do customers feel about the changes?
- First impressions: Likes, dislikes.
- Comparison with other pack (VSP and MAP) with regards to perceptions of:
 - Overall impression on shelf: Better or worse?
 - Freshness and quality: Better or worse?
 - Shelf-life: Longer shelf life – do customer notice any difference?

3.6.3 Awareness and perception of recyclability

- Is there any top of mind mention of enviro friendly?
- Are customers aware of any messages on pack with regards to recyclability?

3.6.4 Overall preference with regard to packaging (Slim Fresh v VSP v MAP)

- Do customers favour one packaging option over others, why?

3.6.5 Barriers

- Are there any apparent barriers to buying meat packaged in Slim Fresh packaging?
- Is there any issue regarding discolouration & appearance of meat (fat, colour, marbling etc.)?
- Do customers notice any discolouration compared to other beef packaging?

3.6.6 Impact on purchase decisions and habits

- Determine whether anyone would choose not to purchase beef due to Slim Fresh packaging?

3.6.7 In-home usage feedback

- Determine whether or not they have purchased Slim Fresh packed beef and what the experience was like in terms of:
 - Ease of opening.
 - Leakage when opened.
 - Sensory – smell, overall delivery on taste.
- If packaging is a barrier to trial, incentivise a sample of shoppers to trial cuts in Slim Fresh packaging and assess the in-home usage experience.

3.7 Study methodology

The selected approach was to explore the above objectives by store intercepts conducted at the meat case with customers browsing the case, across 4 - 5 stores. These intercepts were then augmented by a sub-set of tele-depths to assess the in-home usage exercise amongst first time buyers of the Slim Fresh packaging.

3.7.1 Stage 1: Store Intercepts

- Per store approximately 20 intercepts with fresh meat customers, after browsing / shopping the meat case
- Duration: Across 3 days, approx. 5 hours per store per day
- Incidence rate of approx. 4 per hour
- Interviews of approx. 8 min duration
- Research team to endeavour to interview different ages, life stages and genders
- Intercept guide used to ensure that objectives are covered

3.7.2 Stage 2: Tele-depths

- During the week following purchase, approx. 20 respondents telephoned to assess their in-home usage experience
- Calls to be approx. 5-6 minutes in duration

Discussion guide used to ensure that objectives are covered

4 Customer Feedback Study Results

The study was conducted in October 2019, a total of 85 store intercepts were conducted across 5 stores with customers shopping the meat section. Interviews with shoppers were 5-6 minute duration. Minimal awareness of Slim Fresh Packaging

Of customers shopping the meat cabinet, 33 out of 85 claimed that changes had been made to the meat case. Being early days, amongst those who noticed changes, only 5 identified SFP (Slim Fresh Packaging) as a change. Customers are accustomed to frequent changes, such as lay-out changes, increased range, e.g., Curtis Stone range and Richmond Valley, increase in vacuum sealed packaging

4.1.1 Clear benefits associated with SFP, minor dislikes and concerns

Overall fresh meat purchasers responded favourably towards SFP, initial impressions were primarily positive (Refer to Photo 4):

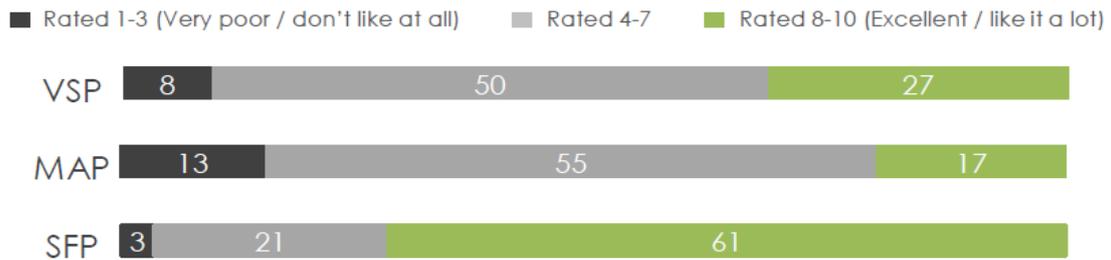
- ✓ Design is vibrant and visually appealing: Illustrations are fun, and highlight key messages, e.g., free to roam and natural
- ✓ Green signals organic, fresh and grass fed: Gives impression product is 'straight from farm'
- ✓ Improved visibility showcases quality of meat: Display described as clean, gourmet and premium. Meat looks fresh and vibrant compared to VSP and MAP
- ✓ Instils confidence when selecting meat: Clear film offers full front / side view of meat, allowing inspection of thickness, fat content, marbling, meat colour / discolouration
- ✓ Less plastic / cardboard back is recyclable: Customers impressed with move towards more sustainable packaging. Expectation that Coles should be moving towards using less plastic and more recyclable materials
- ✓ Vibrant packaging stands out in meat cabinet: Eye catching display compared to clear, 'boring' plastic used in VSP and MAP
- ✓ Labelling is clear and easy to read: Key information is easy to see, on front of pack including 100% Australian beef, free to roam, no added hormones, grass fed and cut of meat. Additional information on back of pack welcomed including location of meat cut, cooking instructions and recycling information

Some aspects with minor dislikes and concerns, which requires further development includes (Refer to Photo 3):

- Unable to view back of product: Limits customers' ability to inspect full cut of meat compared to MAP and VSP. Concern that any faults will be hidden

- Excessive packaging for single piece of meat: While impressed with recyclability, some viewed real estate of pack as disproportionate to size of meat
- Vacuum seal may be difficult to open: Some customers find VSP packaging difficult to open and indicated some concern that this vacuum seal may be similar
- Durability of packaging a concern for some: Edge look unsealed, may peel back / cause leakage. Concerns about longevity of cardboard back

Overall impression of SFP relative to VSP and MAP



Which showcases appearance (quality / freshness) best?

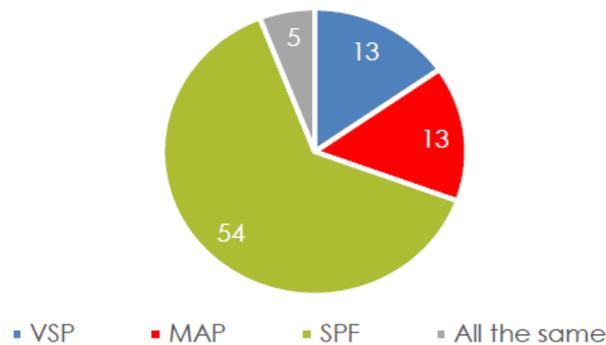


Photo 3: Customer Preference Chart



Photo 4: Slimfresh packs displayed in Coles Supermarket cabinet showcasing the meat (side view)

Overall impression of SFP relative to VSP and MAP

■ Rated 1-3 (Very poor / don't like at all) ■ Rated 4-7 ■ Rated 8-10 (Excellent / like it a lot)



Which showcases appearance (quality / freshness) best?

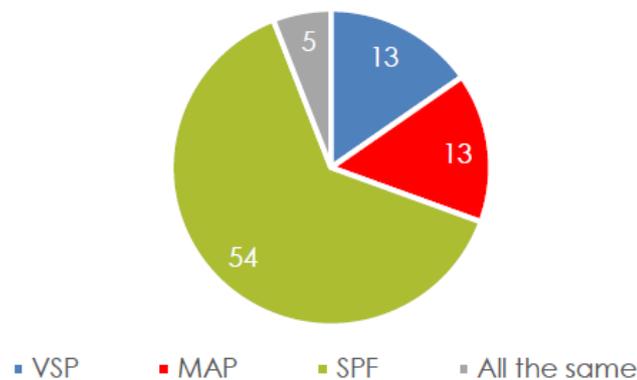


Photo 5: Customer Preference Chart

4.1.2 Environmental impact, a key focus for customers

Affinity towards SFP is largely driven by perceptions of eco-friendly packaging, this is a clear direction customers want Coles to be heading in. SFP was perceived as the most environmental packaging due to strong visual cues (Refer to Photo 6):

- Cardboard
- less plastic
- Green colour
- 'Free to roam', 'Grass fed' text

Which of the trays do you think is more environmentally friendly?

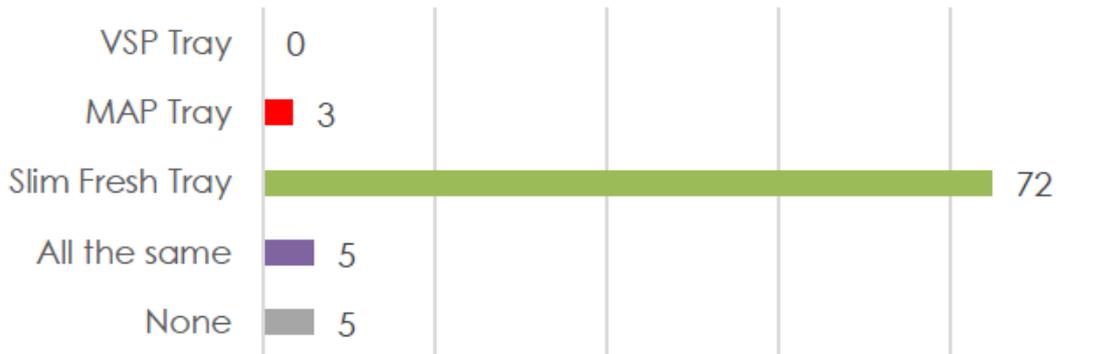


Photo 6: Customers Environmental Perceptions Chart

There is some awareness of recyclability messaging on packaging; unprompted, most customers looked for validation or clear messaging on recyclability on the front of the packaging, not the back. When prompted, the recycling icons on the back were recognised, though some felt the text was too small. Refer to Photo 7.



Photo 7: Recyclability information on back of pack

4.1.3 Mixed awareness regarding meat colour differences

When looking at the different meat packs, 3 out of 4 respondents identified a colour difference: Meat in MAP was described as pink and bright, while meat in vacuum sealed packaging (SFP and VSP) was described as a deeper, darker red. There is confusion amongst customers as to what the meat colour indicates. Some had a view or preference but were uncertain if factually correct, others claimed certainty while others claimed not to know. Refer to Photo 8.



Photo 8: Different colours of meat in SFP, VSP, and MAP packs

Some saw lighter, pinker flesh as a positive:

- the lighter colour indicating freshness
- standard to what they are used to seeing at the butcher

While some viewed darker meat more favourably:

- darker colour being a sign of quality or premium as the meat is more aged and expected to have a stronger flavour
- Retained more meat juices due to vacuum, resulting in a juicier steak
- Vacuum sealed means no preservatives needed to extend shelf life

Some perceived light flesh as a negative:

- Preserved / more artificial
- Expected meat to lack flavour / be bland due to lack of colour
- Some respondents were aware that MAP contained gas to extend shelf life

While others found the darker flesh undesirable:

- Indicated meat is old / less fresh
- Contains preservatives or additives to give colour

The fact that similar observations are prompting different perceptions amongst customers indicates that there is a general lack of understanding of the packaging formats and their effect on meat colour.

4.1.4 Impact on purchase behaviour

Due to the overwhelming choice of products, shoppers' decisions when navigating meat case are primarily driven by desired cut, rather than packaging format. When browsing, once they locate the cut they are looking for, they seldom explore further. These purchase decisions often become habitual; shoppers return to the products they know.

4.1.5 In home usage feedback

16 customers interviewed with respect to slim fresh packaging and participated in the in-home usage feedback survey. Of the 16, 12 were successfully reached and participated in this stage of the study. Overall, those who trialled the Slim Fresh Packaging had a very positive experience:

- ✓ Easy to open
- ✓ Simple and straightforward to peel from sides
- ✓ Plastic film didn't stick to the cardboard, was easy to separate
- ✓ No leakage
- ✓ Easier to open than VSP
- ✓ Recyclable cardboard
- ✓ Easy to store; compact packaging, didn't take much room in the fridge
- ✓ No noticeable deterioration in packaging condition even after storing up to one week in the fridge or freezing and thawing
- ✓ User friendly instructions on how to cook meat and dispose of packaging
- ✓ Those who previously attributed a darker colour of meat in SFP as less fresh, preferring the brighter pink / red colour of meat in MAP, changed their views after trialing SFP, noting that the taste of meat in SFP was "*amazing*"

4.1.6 Key take outs and opportunity to optimise

Based on the customer feedback, the key take outs from the study are:

- Minimal spontaneous awareness of new packaging
- Clear benefits associated with SFP: improved visibility, better for environment, eye catching design and with helpful information on back
- Head-to-head slim fresh tray showcases meat quality better than MAP and VSP
- Affinity towards SFP driven by perceptions of eco-friendly packaging, a positive step in the right direction for Coles
- Once trialled, shoppers highly satisfied and found packaging user friendly / easy to open

The areas where there are opportunities to optimise:

- Stronger communication of recyclability on front of pack
- Educate shoppers regarding meat colour
- Potential to reduce size of pack / board
- A special tab in a different colour to indicate where to peel plastic film from on the packaging

Overall, the study revealed customers had a very positive attitude and appreciation for the new packaging, this further reinforces Coles RROA desire to investigate implementation of this format on a larger scale. The benefits are highlighted in the (draft) publication featuring Darfresh on Board (See Appendix, Section 8.1).

5 Sales Analysis and Market Benefits

5.1 Sales Trend Analysis

The analysis focused on sales data in all stores selling the Graze product range for a period of 7 weeks before the launch, and 7 weeks after the launch. The main variables considered are the uplift in sales volume and the % waste & markdowns. The new format was launched on week 8, due to the transition of stock the sales data for this week is not considered. Though the in-store trial continued for a longer period, weeks beyond the 15th week were not considered in the change analysis as the seasonality and Christmas time periods would impact the results.

The effect of the new pack format on these variables has been assessed by observation and comparison of the trends pre and post launch in the trial stores with the trends in the control group of stores which continued selling the current format. This is done to allow comparison against a continuing 'real time' baseline minimising the effects of seasonality and other external factors affecting sales.

The trial group consisted of 23 stores, the remaining 230 stores in the Eastern region were used as a control group. In order to compare data on a like for like basis, sum of sales values have been averaged in both groups.

5.1.1 Sum of Sales

The average weekly sum of sales value in the stores selling the new pack had a 50% increase post launch while over the same period the control group had a 15% increase. Though there are still many other factors affecting sales in different regions, part of the 35% sales uplift difference can be attributed to the introduction of the new pack format. As shown in figure 1, the weekly average in the change group had a substantial rise following the launch, though the new average remained slightly below the control group average.

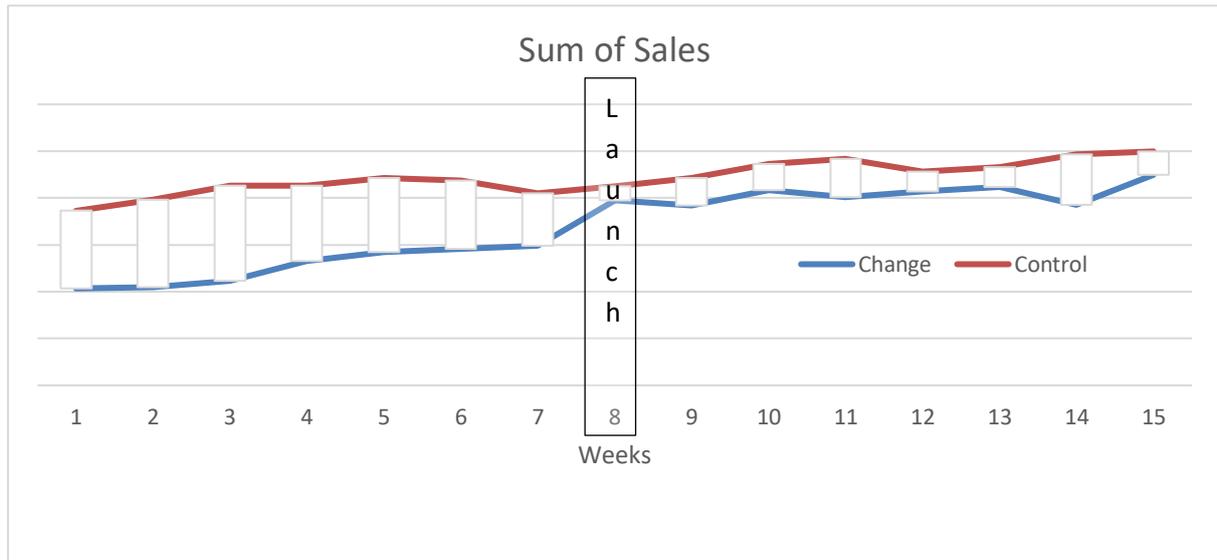


Figure 1: Sum of Sales Trend

5.1.2 Analysis by Primal

i) *Eye Fillet steak*

Eye fillet had a 35% sales uplift in the trial stores, compared to an 18% increase in the control group. Average sales for this product group remained higher in trial stores compared to the control group (see Figure 2).

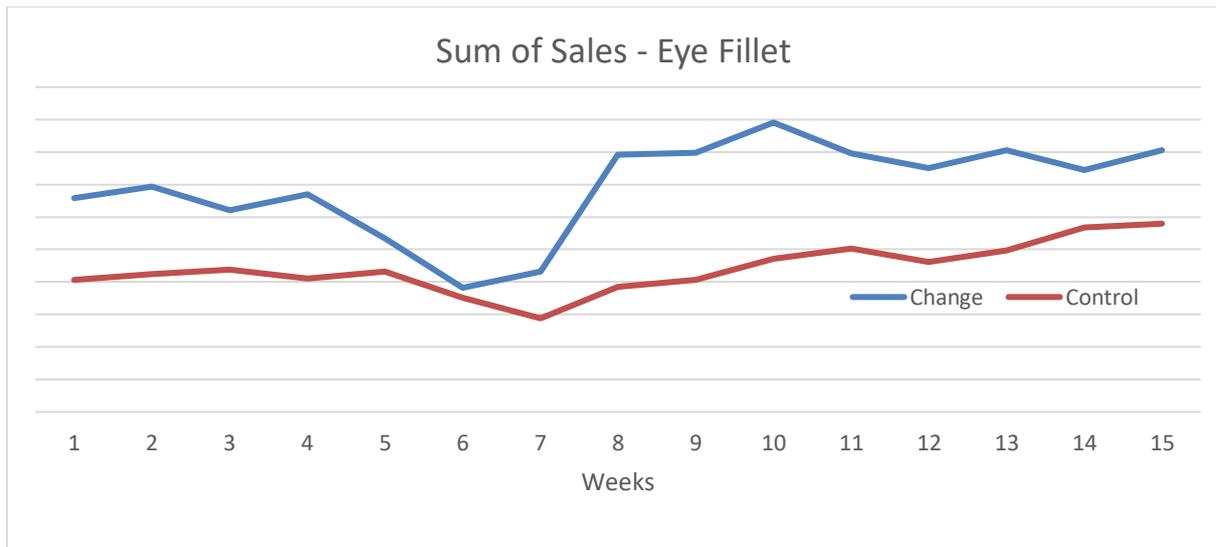


Figure 2: Sum of Sales Trend – Eye Fillet

ii) *Porterhouse steak*

Because the Porterhouse was not sold in all trial stores prior to the launch, uplift analysis is not possible. In the post launch period, sales of this product group in the trial stores were lower yet comparable to the control group average (see Figure 3).

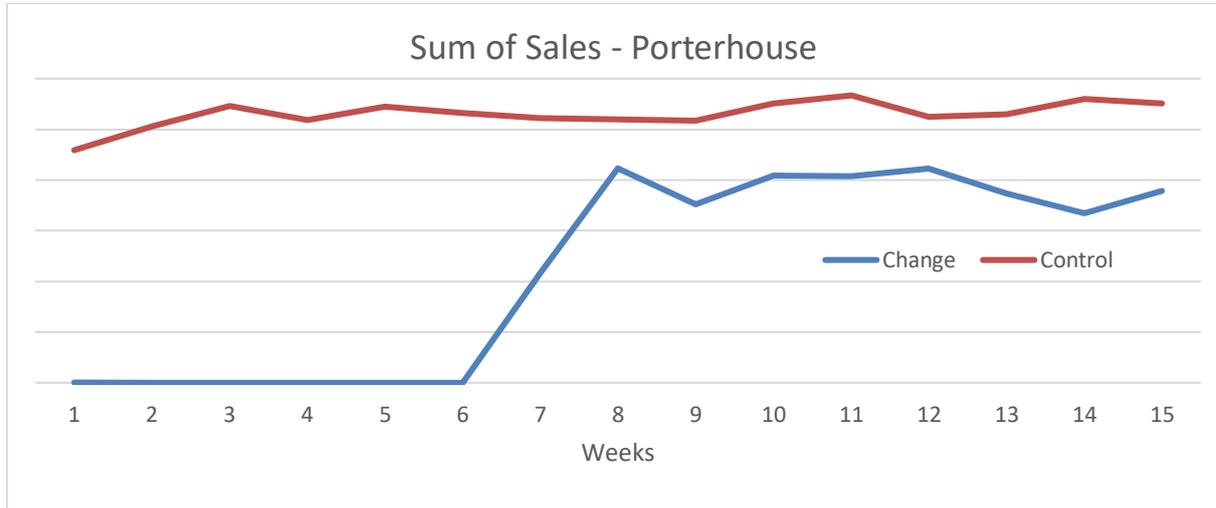


Figure 3: Sum of Sales Trend – Porterhouse

iii) *Rump steak*

Rump sales were the least affected during the study period, sales had a 14% uplift in trial stores compared to 6% in the control group. The trial store average remained slightly below that of the control group (see Figure 4).

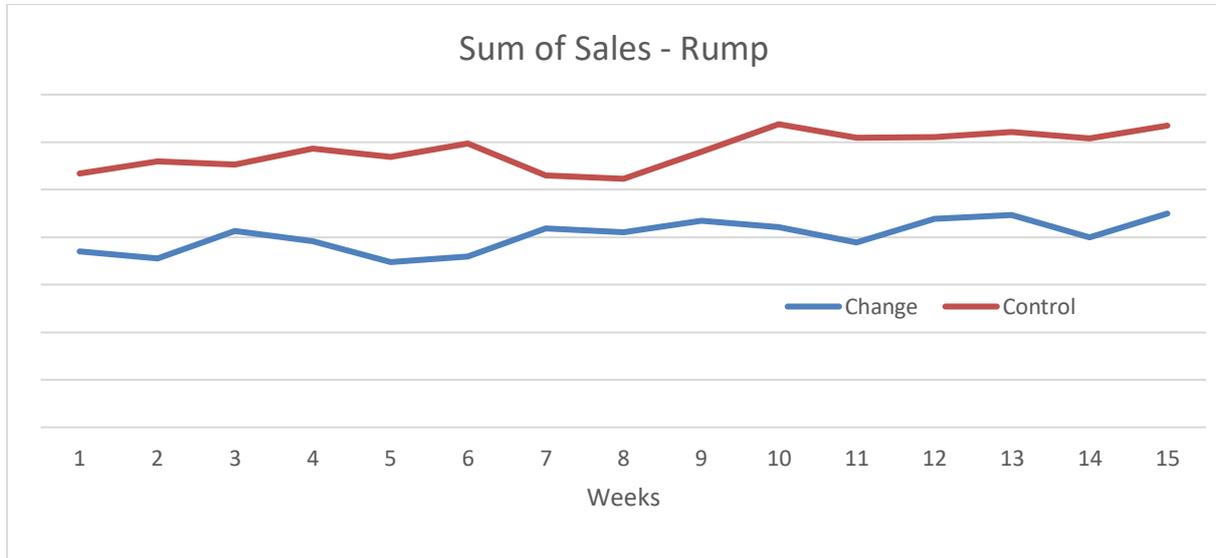


Figure 4: Sum of Sales Trend – Rump

iv) *Scotch steak*

Scotch had the highest variation, having an 80% increase in trial stores compared to 20% in the control group. The uplift also pushed the average sum of sales in the trial stores above that of the control group. This product group showed the highest uplift and best sales response to the new format. In both store groups, this product has the highest sales volume (see Figure 5).

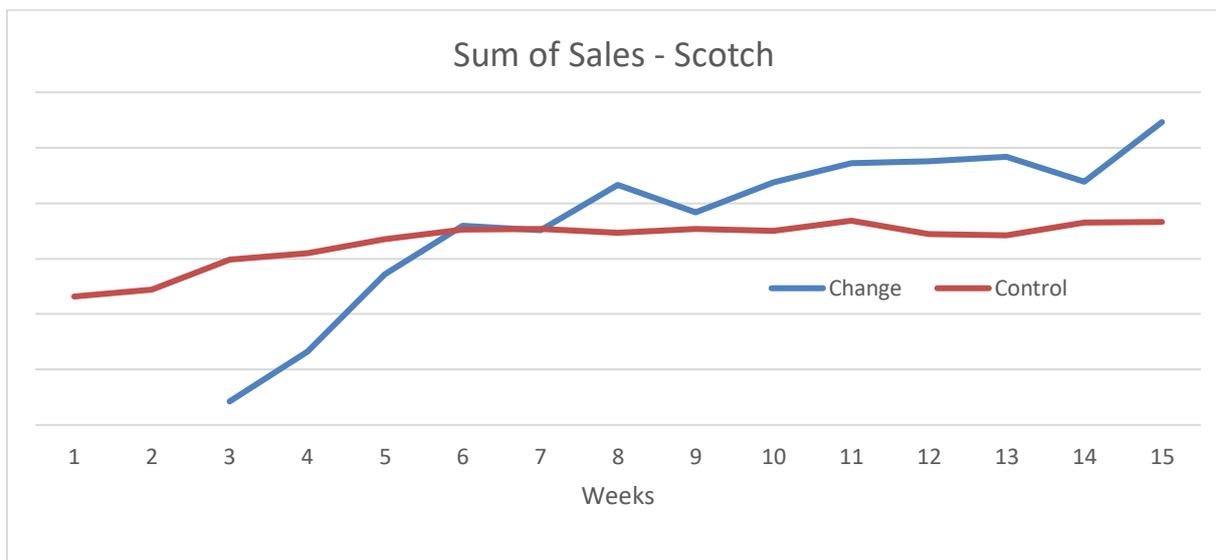


Figure 5: Sum of Sales Trend – Scotch

5.1.3 Waste & Markdowns

The average waste and markdown rate for the product range in both store groups increased by about 0.55% following the launch. Compared to the control store average, the waste & markdown rate in the stores selling the new format remained consistently 1% lower than that of the control group. This indicates no relative change is attributable to the launch (see Figure 6).



Figure 6: Waste & Mark Down Trend

The sales trends are consistent with the positive consumer reception reported in the feedback survey. The analysis indicates consumer support for the product continues beyond free trials and incentivised feedback. Though the scope of this analysis may not be broad enough to guarantee the same 35% sales uplift would be replicated on a national scale, the assumption is that a long term, sustained sales uplift in the 15% to 20% range can be expected.

5.2 Market Advantage

Being the first to offer on-board VSP red meat products would provide a distinctive market advantage for Coles, potentially increasing customer retention rate for the product range and strengthening its image as a leader of packaging innovation and sustainability.

One of the key learnings from the customer feedback study is the desire for sustainable packaging and reduced plastic. The influence the sustainability aspect of the offering has on sales is expected to continue growing in the years to come as consumers become increasingly aware and sensitive to the potential impacts their purchasing habits can have on the environment.

The VSP on board format also allows for the conversion of displays from shelf to hang sell, a presentation which promotes sales and benefits stores by increased facings, more efficient use of space, and easy replenishment of the display (See Photos 9 & 10).



Photo 9: Shelf display of Slimfresh product



Photo 10: Hang Sell display of VSP packs

5.3 Scale Up Evaluation

In preparation for the next steps, preliminary engineering is underway at RROA. The objective is to define the concept, outline the scope, and estimate the budget required to enable full scale production of the new format. As with most installations within existing facilities, one of the main challenges will be to develop a new line layout design within the existing installations and limited available space.

The RROA Engineering team is also evaluating various equipment design options and developing a User Requirement Specification (URS) for equipment and material selection. The intended product range is high value cuts such as the Graze Beef (as trialed) and Coles Premium range. Incorporating key take outs from the customer feedback study, the URS will include specific requirements and metrics on the following elements:

- Pack throughput and cycle time
- Number of sealing heads
- Infeed of pre-cut board vs roll stock
- Board format(s)
- Labelling format and technology (possibility of printing pack specific information directly on to the board)
- Material and operating costs

- Recyclability of packaging materials
- Easy peel feature with clear identification on the pack
- Printed board allowing eye catching design on front and information on back of pack

For a typical production facility, such a project would represent a CAPEX investment in the range of \$2M to \$2.5M.

5.4 Cost Benefit Analysis

A cost benefit analysis has been made based on current sales figures, trial sales trend, and scale up evaluation.

The analysis makes the conservative assumption that the new production equipment would operate at the same rate, efficiency, and labour requirements as the current production lines. Considering advancements in packaging technology, there may in fact be additional benefits from new equipment designs providing increased throughput, higher efficiencies, or automation of certain tasks allowing reduced labour requirements. Packaging material costs are also considered to remain at the same level.

The benefit in this analysis is derived exclusively from the anticipated 15% sales volume uplift of the Graze and Coles Premium product ranges at their current in-store profit margins.

6 Conclusions & Recommendations

6.1 Conclusions

Based on consumer feedback in Australia and the observed success in Europe, the Australian market is deemed ready to support and benefit from full scale offering of on board VSP red meat products.

6.1.1 Coles Objectives / Project Viability

Coles is committed to drive red meat growth and take the lead on sustainability initiatives, this study has been key in confirming commercial viability and supporting the decision to move forward.

The positive consumer feedback, sales uplift analysis, and alignment with marketing and sustainability objectives have enabled Coles to continue to the next steps with a future potential project to develop a new, full scale and permanent capability for on-board VSP format for red meat products.

A new product initiative will initially be driven by Coles product category managers and marketing teams who will design the new product offering. This will then define the technical production requirements for RROA to expand its packaging capability to support the new format.

6.1.2 Cost Benefit Analysis and benefits for RROA

The primary findings for RROA were:

- No changes to the average waste and markdown rates were observed for the product range in both control and trial store groups.
- The sales trends are consistent with the positive consumer reception reported in the feedback survey. The analysis indicates consumer support for the product continues beyond free trials and incentivised feedback. Though the scope of this analysis may not be broad enough to guarantee the same 35% sales uplift would be replicated on a national scale, the assumption is that a long term, sustained sales uplift in the 15% to 20% range can be expected.
- One of the key learnings from the customer feedback study is the desire for sustainable packaging and reduced plastic. The influence the sustainability aspect of the offering has on sales is expected to continue growing in the years to come as consumers become increasingly aware and sensitive to the potential impacts their purchasing habits can have on the environment.
- The analysis makes the conservative assumption that the new production equipment would operate at the same rate, efficiency, and labour requirements as the current units. Considering advancements in packaging technology, there may in fact be additional benefits from new equipment designs providing increased throughput, higher efficiencies, or automation of certain tasks allowing reduced labour requirements. Packaging material costs are also considered to remain at the same level.
- The benefit in the analysis is derived exclusively from the anticipated 15% sales volume uplift of the Graze and Coles Premium product ranges at their current in-store profit margins.
- The average weekly sum of sales value in the stores selling the new pack had a 50% increase post launch while over the same period the control group had a 15% increase. Though there are still many other factors affecting sales in different regions, part of the 35% sales uplift difference can be attributed to the introduction of the new pack format.

- A cost benefit analysis has been made based on current sales figures, trial sales trend, and scale up evaluation at RROA.
- It should be noted that the investment amount depends on many site specific factors such as required speeds, infrastructure, upstream and downstream operations, etc. of the facility where the equipment would be installed. In some cases a smaller manual operation could be established for a fraction of the investment. The Coles strategy for a national launch and supply requires a significantly higher investment to meet demands.

6.1.3 Value Proposition for the Australian Red Meat Industry

The introduction of red meat in on board VSP format will benefit the Australian red meat industry by providing consumers with sustainable packaging, longer product shelf life, improved quality, and enhanced presentation of red meat products. This corresponds to consumer demand outlined by feedback surveys and observed buying habits.

6.2 Recommendations

The current phase of work has focused on the measurement, evaluation and reporting of the business case and benefits on the VSP on Board technology for red meat. In order to establish the actual cost benefit analysis over time, the following metrics would need to be monitored by Coles/RROA on a quarterly basis for a period of 1 year where the Slimfresh packaging system is used:

- Sales/demand uplift by primal measured as higher service level issued to domestic stores.
- Export sales/demand uplift by primal measured by increased quantities attributed to Slimfresh packaging.
- Waste reduction levels measured daily. Estimate that scrap levels will be reduced to only 1%
- Increase in number of red meat pack facings in stores, measured monthly.
- Customer insights (including feedback survey results on consistency and pack presence) led value proposition features identified and monitored during the research. To be measured monthly.
- Waste and markdown reduction by primal at store level. To be measured monthly.
- Shelf life verification and validation schedule using the new pack format.

7 Key messages

The outcomes of this project confirm the Australian market is ready to support red meat offerings in paper board VSP format. By putting forward and showcasing the quality of premium red meat cuts, providing sustainable packaging, and extending shelf life, the new format delivers added value to consumers and has the potential to grow and promote red meat sales.

The sales uplift observed during the trial is believed to be a good indication of what can be expected from the introduction of such packaging format in the wider red meat industry.

The format has proven to be a success, however the investment in capital and infrastructure requires detailed review depending on volume, speeds, and range of products to be transitioned. Coles are

reviewing all capital investment options to ensure the selected technology has sufficient flexibility to enable new variations and innovation into the future.

8 Appendix

8.1 Draft publication featuring Darfresh® on board

NEWS ARTICLE	
STORY DETAILS	
Story name	Red meat joins the war on waste
Feedback edition	July/August 2020
Writer	Breanna Wardle
Edited	RJ 15/5, CM 19/5
Version	Edits incorporated 21/5 ready for subbing
Approval (people who have read/corrected/approved this document, the date and the format for approval e.g. email)	Michael Lee approved via email on the 30 th April 2020 Patrick Youil approved his quotes via email on the 29 th April 2020
IMAGES	
Notes to editor/designer	
Photos	Yes, 3 photos: <ol style="list-style-type: none"> 1. FB_JulAug20_XX_CorumatMeatTrayConcept_1 2. FB_JulAug20_XX_HotFridge_1 3. FB_JulyAug20_XX_DarfreshOnBoard_1
Captions	<ol style="list-style-type: none"> 1. Corumat’s new plastic free meat tray packaging concept, developed using upcycled food waste. 2. MLA’s Chef Sam Burke demonstrating ‘hot fridge’ red meat concepts. 3. Merchandised Coles Graze Beef range prepared by Retail Ready Operations using Darfresh® on board packaging.
Diagrams/graphics/illustrations	Yes – 2 info graphics which are detailed below.
MORE INFO PANEL	
More information (name, title and email of interviewees)	Michael Lee E: mlee@mla.com.au
Resources e.g. URLs	

<https://www.mla.com.au/news-and-events/industry-news/red-meat-joins-the-war-on-waste/#:~:text=With%20an%20estimated%20one%2Dthird,to%20revolutionise%20red%20meat%20packaging.>

Red meat joins the war on waste

Plastic-free meat trays and shelf-life extending technologies are just two of the ways the red meat industry is helping to reduce food wastage.

With an estimated third of all food produced globally thrown away every year across the value chain, MLA has stepped up to the challenge to revolutionise red meat packaging.

Here, MLA Group Manager – Science and Innovation, Michael Lee, explains why these innovations matter to the red meat industry, from producer to consumer.

“Food wastage is a bigger problem than most of us think because when we throw out food, we’re also wasting the water, fuel and resources it took to get that produce from farm-to-fork,” Michael said.

“Fast forward to 2050, when there’ll be approximately nine billion people in the world who need to be fed, and it’s clear we can’t afford to waste a third of all food produced.

“Not to mention, the methane released by decomposing food waste is one of the most potent greenhouse gases (GHG) responsible for climate change.”

MLA’s projects are stemming food wastage by addressing three questions:

1. Can plastic in packaging be replaced by other materials?
2. If plastic has to be used, can use be minimised?
3. How can red meat shelf life be extended to prevent spoiling?

Sustainable solutions

With many producers already implementing sustainable practices to reduce GHG emissions as part of the red meat industry’s target to be carbon neutral by 2030 (CN30), Michael said it’s an approach which needs to be adopted throughout the food value chain.

And the good news is: producers and red meat brand owners are set to be winners.

“Many of the food waste reduction solutions can actually create higher demand for red meat and increase the profitability of the value chain by tapping into our sustainability credentials.

“Sustainable red meat packaging innovations reward the practices producers are already implementing to reduce GHG emissions.”

Michael said new food packaging shouldn’t just increase the industry’s ‘waste accountability’ but needs to also recognise how consumers will eat in the future and how food distributions will trade.

For example, ‘plastic credits’ – similar to carbon credits – could create value for the red meat industry.

“Choosing sustainable packaging may end up reducing your carbon footprint, but ‘plastic credits’ might one day become a new revenue model for how brand owners select and collect their packaging materials,” Michael said.

Consumer demands

MLA consumer insights play an important role in forecasting the future requirements of red meat eaters, including how they want their food packaged.

For example, the way people are eating has changed in recent years. There are fewer people in each household, more people are eating out and more food being delivered to homes.

Information like this is used by the food industry to adjust packaging size, so product is customised for consumer requirements.

“The ratio of product to packaging is vital to make packaging more sustainable as well as a format to appeal to the target market,” Michael said.

Another trend is ‘snackification’ – many consumers are moving away from the traditional three meals a day and opting for a flexible approach to eating and snacking on-the-go, up to six times per day.

“Packaging innovations continue to be a key research area to ensure the red meat industry which traditionally focuses on a raw, fresh offer can adapt to on-the-go meat pack designs,” Michael said.

“We need to consider easy-to-open and tamper-proof features for ready to cook-heat-eat solutions which optimise shelf life, minimise food waste and reduce plastic use.”

A new way of packaging red meat

Here’s a closer look at how three MLA projects are developing solutions to food wastage by reinventing red meat packaging.

Plastic-free meat tray

MLA worked with American start-up company, Corumat, to develop patented technology using food and meat waste to make a plastic-free and compostable meat tray.

This project takes a ‘circular economy’ approach, where resources (in this case, food waste) are upcycled to extract value rather than being discarded.

“Upcycling waste streams could potentially re-position our True Aussie Beef and Lamb to be clean, green and plastic-free,” Michael said.

“This complete value chain story of sustainability provides Australian red meat with a significant competitive advantage in the global protein market and brand owners, producers and consumers alike are set to benefit.”

The Corumat meat tray is also approximately 20% cheaper than other plastic meat trays.

It’s still under development but shows promising signs of market adoption and MLA’s currently working with Australian red meat brand owners to identify opportunities to use this technology.

Red meat beyond the supermarket shelf

Red meat can be an expensive protein for foodservice outlets to serve, so MLA Donor Company (MDC) is investing in solutions to optimise shelf life and reduce markdowns to keep red meat on menus throughout the world.

Food company Meal Me Pty Ltd is adapting combination oven cooking to develop ‘hot fridge’ technology to present red-meat as a true ‘grab and go’ product range, increasing the value of secondary cuts and positioning red meat as a convenience protein.

“Unlike the traditional cook-chill process for ready meals, the hot fridge safely preserves food for up to three days at the temperature it needs to be served at,” Michael said.

“It’s a way for red meat to get beyond the supermarket into convenience-type options served at petrol stations.”

“Combining the quality of slow-cooked meats with the efficiency of fast service can unlock new opportunities for red meat, reduce food waste and ultimately increase the profitability of the red meat industry.

“Longer shelf-life provides a ‘better with age’ product quality and means less wastage.”

MDC is working with food companies to develop a red meat range of products using the hot fridge.

INFOGRAPHIC

- Red meat sales could increase by \$380 million if hot fridge technology is widely adopted.
- If 25% of restaurants and aged care facilities and 10% of fuel stations in Australia adopted a red meat grab-and-go product, it would generate approximately \$150 million in sales.
- The electricity bills of small retail outlets using the hot fridge technology were reduced by approximately \$400/month.

Source: MLA report: *Preliminary evaluation of red meat in Meal Me (Hot Fridge technology)*

Reinventing the traditional tray

The plastic meat tray and soaker pad combination or three-layer plastic vacuum skin packs could one day disappear from supermarket shelves.

Another MLA-supported project uses zero-scrap packaging technology.

The Darfresh® ‘on board’ packaging uses a board made from paper pulp. The meat sits directly on the board and is vacuum sealed with plastic to seal in freshness and extend shelf life.

“This technology uses 70% less plastic than standard trays,” Michael said.

This packaging is already being trialed in-store at Coles, after Retail Ready Operations became the first Australian company to try Darfresh® on board.

Retail Ready Operations Supply Chain and Transition Manager, Patrick Youil, said the response from consumers has been positive.

“This new packaging instils consumer confidence when selecting meat as the clear film offers a front and side view of the meat.

“Consumers can easily inspect the thickness, fat content, marbling and colour before purchase.

“New local and international export opportunities have emerged through this innovative packaging concept, where meat not only stays fresher longer, the packaging is environmentally-friendly and it offers fantastic messaging opportunities to consumers,” Patrick said.

MLA continues to partner with red meat value chains, including Retail Ready Operations, through the co-innovation program, developing innovative solutions to help companies achieve their sustainability targets.