

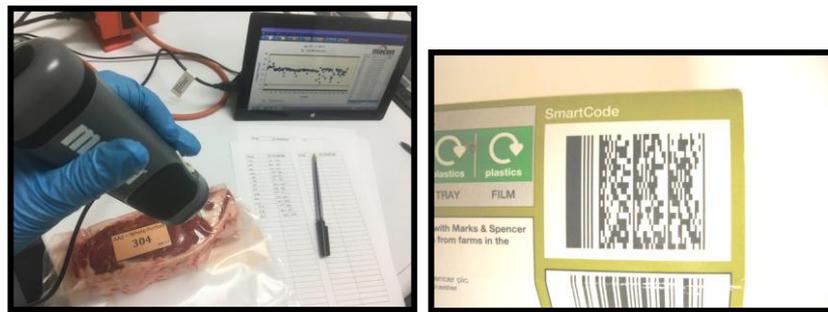
## Meat packaging solutions to current industry challenges: a review (Updated)

Project Report Reference: 2014-1042

Date: 9 January 2018

### Project Description

Much advancement has occurred in the field of smart meat packaging, and the potential for these to be used as tools that respond to challenges faced by the red meat industry is exciting. This project reviewed intelligent and active packaging solutions to several immediate concerns. These were considered in terms of their usefulness, practicality and advantages for fresh, unprocessed lamb and beef – however broader product applications were evident.



Smart packaging examples of a commercially available in-pack oxygen sensor (LEFT) and a 3D smart barcoding option (RIGHT).

### Project Content

Important factors identified as challenges to red meat's economic and societal potential and reviewed in this project included:

- / Dark cutting
- / Purge losses
- / Traceability
- / Durability
- / Microbial profile (safety and spoilage)
- / Retail-potential and colour
- / Environmental impacts
- / Eating quality

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**Project Outcomes**

Several key observations were made that must be considered when exploring smart packaging responses to these industry challenges:

**Cost of implementation** is a common hurdle for all packaging responses that can be reduced through improved economies of scale, device simplicity and disposability, and a better understanding of cost-versus-benefit (i.e. can we get the same outcome at a batch level as if implemented for individual products?)

**Clarification of audience** or who will be using the information gained from smart packaging should be established. This will impact on the retail-potential of a product – for example, if only the retailer is aware that a product has nearly expired then it could be discounted without prompted undue consumer discrimination?

**Purpose assurance** is important for red meat products as many smart packaging options have been repurposed from other applications (e.g. medical and engineering fields, etc.) or tested only within laboratory conditions. Knowledge of practical outcomes (field tests) would allow more educated decision making and comparison to conventional packaging.

**Legislative or legal requirements** for packaging differ between markets and will influence product access. It is important that these are considered before adoption to allow for continued and uninterrupted supply.

**Secondary effects** of smart packaging beyond their primary task must be confirmed prior to their use. For example, a packaging option that improves product shelf-life at the detriment of eating quality may promote initial sales, but at the expense of potential resales. Understanding these relationships would allow for a more balanced decision.

**Benefit for Industry**

From these outcomes, red meat industry stakeholders are recommended to consider packaging as a part of a broader solution to managing current challenges. This recommendation should not discourage the adoption of smart packaging – instead it should ensure that the actual and economic contributions from packaging are understood prior to adoption and implementation.

**USEFUL RESOURCES**

Review Paper 1: [www.sciencedirect.com/science/article/pii/S0309174018302377](http://www.sciencedirect.com/science/article/pii/S0309174018302377)

Review Paper 2: [www.eurekaselect.com/156684](http://www.eurekaselect.com/156684)

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