

Serving up what the customer wants: I&I NSW's sheep meat research

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NSW sheep meat research

The red meat research and development program at Industry and Investment NSW's (I&I NSW) Cowra research station is focussed on product end users, whether they are producers, processors, retailers or consumers.

I&I NSW's current work is centred on two main areas – the production of sheep meat and the processing of sheep, beef and goat meat.

Production of Sheep Meat

Cowra is one of eight sites across Australia that is part of the Information Nucleus Flock (INF) as part of the CRC for Sheep Industry Innovation. I&I NSW runs a second site at Trangie. The objective of the INF is to measure a range of biological and production parameters in meat sheep and to produce heritabilities and genetic correlations for a range of new traits. Approximately 100 sires are mated annually by AI to 5000 Merino and crossbred ewes across the sites. Each year 2000 progeny are evaluated for a wide range of meat production and consumer-relevant traits. Some of these traits are new and novel, such as the content of iron, zinc and omega-3 fatty acids.

Achieving levels of iron (Fe), zinc (Zn) and omega-3 fatty acids that reach

recommended dietary guidelines (i.e. a good source) has been proposed as a key marketing tool for red meat into the future and their measurement is designed to ensure lamb maintains its marketing edge as a healthy, nutritious meat.

Aiming for other traits such as tenderness is not new, but still very important, and the Cowra team undertakes half of the tenderness testing in the Australia wide project. Linked to this, the team is also studying the application of Raman Spectroscopy as a better measure of tenderness in collaboration with scientists at the Agri-Food & Biosciences Institute in Northern Ireland.

Another important trait that impacts on eating quality is intramuscular fat. There is some evidence that selection of animals for muscling reduces this trait. Establishing the genetic relationships between these two traits is important to ensure breeding objectives do not compromise the market acceptance of lamb.



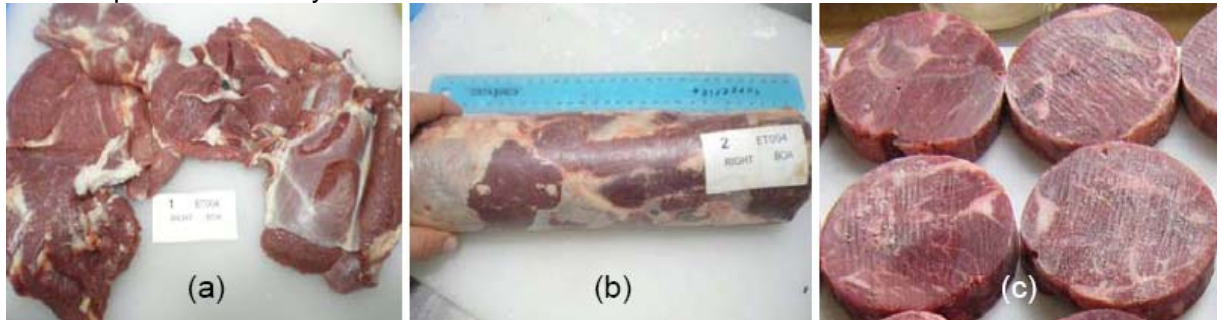
Edwina Toohey (Research Officer) demonstrating the shaping/stretching technology at the INF open day April 2009 (250 people attended) with Dr David Hopkins

Consumer preference guides research

The Cowra team is establishing the link between consumer's preference for the colour of lamb, either fresh or during display,

and measurements taken by instruments which are routinely used in the research program. Saoussan Khliji from Morocco, funded by the European Union's Agris Mundus program, is compiling data from 1100 responses to surveys conducted in

Dubbo and Canberra in 2009 as part of her Masters thesis. This work will develop threshold values to ensure instrument readings are well correlated with consumer preferences.



(a) Hot-boned lamb forequarter; (b) the same meat after stretching and reforming into a roll; (c) portion-sized slices of frozen meat cut from the roll.

Processing of sheep, beef and goat meat

A major focus of meat processing research is to improve the eating quality of red meat. Chilling conditions that minimise weight loss without negatively impacting on tenderness present a significant saving to industry. Very fast chilling has been proposed as a method to optimise processing efficiency by reducing processing time and chilling inventories. This approach is being studied in collaboration with scientists in Western Australia and Victoria.

I&I NSW is also undertaking research on a machine to shape and stretch meat which offers scope for integration into cold and hot boning operations. This technology has the potential to add value to lower value cuts and promising work is underway with beef processors to improve the functionality of cuts like the eye round. The potential to reform sheep forequarters predisposing them to portion cutting is also under investigation as shown above. This work is co-funded by both Meat & Livestock Australia and Meat & Wool New Zealand.

The test is in the tenderness

The ability to improve the tenderness of meat is also a key focus of research. For example, I&I NSW (Cowra) has been instrumental in the Australia wide adoption of electrical stimulation technologies. More than 70% of the throughput of sheep and lamb meat in Australia is now subject to this technology. I&I NSW is now working on a collaborative project with researchers at the University of Otago in New Zealand to develop enzymes to improve the tenderness of red meat.

Future research

I&I NSW's meat research program will develop improved models of the relationships between carcass and meat traits. This will ensure that selection for production traits does not lead to deleterious effects on the quality traits which give lamb a marketing edge. Research will also examine the potential to manipulate important nutritive value and eating quality traits while, at the same time, investigating ways to improve and measure meat quality at the processing level.



I&I NSW Sheep Meat team (July 2008) – Matt Kerr, Edwina Toohey, David Stanley, Gordon Refshauge, Dr David Hopkins and Tracy Lamb.

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