SHEEP CRC NEWS - NOVEMBER 2016

From the Homestead

The Participants Forum held earlier this month provided an excellent opportunity to review progress across the various Programs and identify opportunities that warrant further planning and definition prior to March 2017 when we hold our next forum. Thank you to all our Participants who attended the Forum and for the contribution that you made.

One topic requiring follow-up is a summary of the discussion on the CRC's transition plans at the windup in June 2019. A follow-up action is to document the key elements of the discussion, highlighting issues needing further work prior to our annual Planning Meeting.

Once again, please make a note of the dates for our annual Planning Meeting, scheduled for 21-23 March 2017. The meeting will again be held in Coffs Harbour and all Participants are encouraged to make airline bookings well in advance and, where possible, take advantage of special fares. Forward planning makes a big difference to the overall cost of holding the meeting.

This newsletter includes a new section covering the CRC's activities in the area of commercialisation and adoption. David Faulkner is already making his mark as he provides new ideas and guidance in the area of commercialisation. As we count down to the end of the CRC, this area of commercialisation and adoption will become increasingly important and we look forward to David's contribution.

James Rowe
CEO

The next Sheep CRC annual planning meeting is scheduled for 21–23 March 2017 in Coffs Harbour

SHEEP CRC

Australian Government
Department of Industry, Innovation and Science
Business Cooperative Research Centres Programme

Wellbeing and productivity

Preliminary modelling of condition score using depth images indicates that this is a feasible approach when animals are off-shears. Further calibration studies are planned using three different cameras to collect images on a large number of sheep through November and early December.

Further research on wool cortisol will determine if this measure reflects sensitivity to stressors such as flystrike, worm burden etc. The start has been delayed as assay validation has been the main focus in recent months. Testing will soon commence on samples from the Information Nucleus Flock that have been identified for fly strike animals (1000 samples) across multiples years.

Work on auto-monitoring for lameness is making good progress with image analysis work underway in conjunction with the UNE computational science group. Images are also being collected for video image analysis to provide automated dag scoring.

Development of the biophysical models that form part of the data analytics for calculating risks associated with weight loss, flystrike, internal parasites and extreme weather events is now complete. Weather data from the Bureau of Meteorology, downloaded on a daily basis, is integral to the modelling.

The launch of the first version of the Wellbeing app is planned for early March 2017. This app will provide risk information to producers about flocks and management groups. User-interface testing is currently being conducted via an industry advisory group, and planning is underway to identify producers who might be interested in assisting in validation of the app over the coming year.

Quality-based sheep meat value chains

Progress with Lean Meat Yield ("LMY") measurement and feedback:
Development of the DEXA system for the assessment of carcase LMY started on a small scale level in 2012 (in New Zealand) and after many research prototypes, a commercial prototype was ready in 2015 for large scale testing in Australia (JBS, Bordertown plant). The role of the CRC has been to coordinate calibration—firstly with 600 lambs from the MLA genetic resource flock. The initial results showed that DEXA could measure carcase composition with high accuracy (r2=0.9 for fatness) at line speed. Further testing involved a detailed bone-out of 200 lambs that also provided information to update the carcase calculator with accurate prediction of cut weights.

Hook tracking, validation and refinement of the predictions are being undertaken with our collaborators in Victoria and South Australia. Furthermore, hardware/software changes need to be made so the DEXA machine can communicate data to the plants' IT systems. The overall progress has been strong and involved a huge collaborative effort lead by JBS, Scotts Technology, MLA, MLA Donor Company, AMPC, SARDI/PIRSA, Vic DEDJTR and the Sheep CRC.

The Sheep CRC will also lead a new project supported by AMPC to develop a new GR probe as this has been requested by our processing partners.

Progress with IMF measurement:
Carometec will visit Australia in March to deliver four new Mark II hyperspectral cameras designed for IMF measurement - three cameras for beef and one for lamb. Validation of the new camera will utilise the MLA resource flocks. The Japan Image Company is also collaborating on developing imaging technology for lamb. The company has considerable experience and credibility in beef grading.

Thus far, measurement of IMF using NIR technologies has proved unconvincing but further work is in progress before this avenue is excluded.

The CRC has also produced an extension booklet on lean meat yield and eating quality that has been well received by producers.

Sensory testing update:
The sensory testing of grilled product in Australia, USA and China has been completed and preliminary results presented at LambEX. The results show there are strong similarities between all the consumers despite over 30% of the US consumers never having eaten lamb before the testing. Moreover the Chinese consumers were quite generous in the scoring with some 40% of consumers rating lamb loins as a premium product. Further analysis is underway to determine the roles of LMY and IMF on the sensory outcome of international consumers.

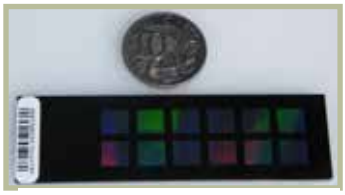
The hot pot consumer testing in China is now underway following development of a brand new cooking protocol for the MSA sensory testing.

Faster affordable genetic gain

We have started to work on the sequence data that has been generated following full sequence analysis of approximately 400 animals from the Information Nucleus Flock.

Sequencing involves reading the full DNA code. Every individual has approximately three billion letters in their DNA code. The analysis only looks at places where these letters differ, known as SNPs, and we expect to identify around 30 million SNPs across the data set. We are collaborating with an international consortium and will also have access to sequence data from a further 300 sheep measured in other projects by members of the consortium. The Sheep CRC data will also contribute to the international databank.

The sequence data will be used for imputation studies and will therefore provide 'full sequence' information for more than 30,000 animals with phenotypic data and DNA test results. We have yet to determine which of the 30 million SNPS are most useful in the prediction of genetic differences but expect to be able to use the new information to improve the design of future SNP tests.



50k SNP

Some early results from the dairy industry suggest that prediction accuracy might only increase by a small amount when using sequence data compared to 50k SNP data. However, we will focus on predictions across breed, and predictions from animals only distantly related to the resource flock animals. The diversity in our sheep data is much larger than is found in most dairy studies on Holstein Friesian bulls and so the benefits from this approach are potentially more useful in the sheep industry.

Besides prediction accuracy we will also look at genetic defects, and loss of function alleles. These are deleterious mutations that we want to be able to identify through DNA testing. Further work will be done to develop cheaper genotyping options, both for genomic prediction and for parentage.

Our adoption strategies are focused in the following areas:

- assisting AGBU with developing single step evaluation drawing on DNA data;
- developing case studies of breeders on how to best use genotype information;
- Cost-benefit modeling of genotyping in multiplier and commercial flocks;
- A pilot trial to evaluate and promote Flock Profiling; and
- Delivery and development of RamSelect.

Update of RamSelect statistics:

- Rams listed for this ram selling season are now over 15,000
- Catalogues listed are just over 180.

Commerialisation of CRC products & services

Sheep CRC Commercialisation Manager David Faulkner

Following a review of the list of products being developed by the Sheep CRC, a decision was made to focus commercialisation activities on opportunities for the Wellbeing & Productivity apps.

The initial focus of the 'Commercialisation of Wellbeing & Productivity apps' project has been to investigate the immediate needs at producer, advisor and supporter levels of the industry. Lu Hogan has assembled a group of producers and advisors to be involved in testing the apps through the development phase. The Sheep CRC Participants will be contacted, together with industry associations, government advisors, and various commercial companies to understand their direction and assess opportunities. With launch of the first Wellbeing app scheduled for March 2017 development of the commercialisation plan is very timely. Supporting businesses that have involvement with the sheep industry including animal health, nutrition, seed, fertiliser and equipment companies will also be engaged in considering opportunities for using the new apps.

RamSelect.com.au