



## Books, Book Reviews, Extracts

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Sheep CRC Update seminars held in eight locations across Australia between February and May 2010 provided a valuable summary of progress achieved by the Sheep CRC and our Participants in our first three years of operation. The Sheep CRC publication '2010 Sheep Focus' captures key messages and results presented in the seminars in a form that provides an easy reference document. It should be cited as:

Sheep CRC/Julius van der werf – *2010 Sheep Focus – Genetic Gain*

# INCREASING GENETIC GAIN

## *The pathway forward*



Photo: Sheep CRC

*Prof. Julius van der Werf  
Program Leader,  
Information Nucleus*

There have been significant improvements in genetic knowledge as a result of adding data from the Sheep CRC’s Information Nucleus flocks to the data gained over many years from sire evaluation trials, other research flocks and the impressive bank of data contributed by industry flocks in Sheep Genetics.

*LEFT: Poll Dorset ram & ewes  
(the ram is wearing a crayon  
harness to identify  
joined ewes).*



Photo: Joan Gates

The Sheep CRC Information Nucleus is a collection of 8 flocks across diverse regions of Australia with approximately 5000 Merino and crossbred ewes joined annually to about 100 sires for 5 years. Sires have been chosen from across most breeds for their diversity, high industry usage and footprint, and to gather data on key traits. Without this new knowledge breeders could be changing many traits—unknowingly to the detriment of meat and wool quality and fitness of animals.

To produce high quality prime lamb or wool, producers need to choose the right ram, get the lambs on the ground, keep them alive, make them grow, ensure they yield well and that their meat is tasty and nutritious, and also, where appropriate, produce wool that is bright and comfortable to wear.

***Every trait has a genetic base and Australian Sheep Breeding Values (ASBVs) are the most practical way to objectively assess and select for or against these traits.***

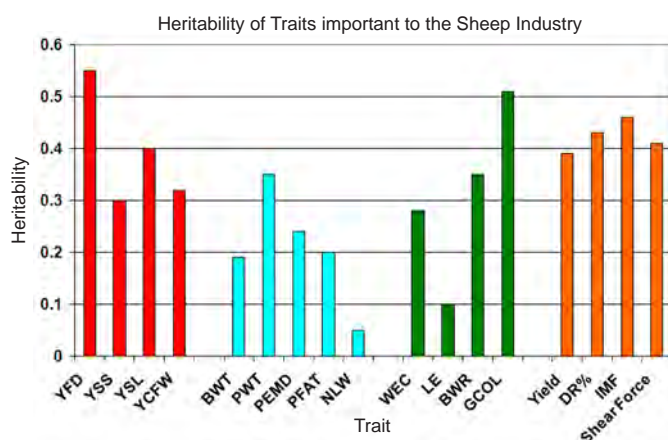
Birth Weight ASBVs are now available for breeds including Merinos and go some of the way to determining the degree of lamb survival and lambing difficulties. However, the new ASBV for Lambing Ease, which identifies the propensity of a ewe or daughters of a ram to have an easy or a difficult lambing, is also valuable to review when choosing rams so as to make lambing time less stressful and more profitable. No one can afford to lose ewes worth up to \$200 on current prices.

Most traits are correlated to other traits and often the ‘non-visible’ traits are also being changed when selections are made. While Sheep CRC research now shows that there is potential for unfavourable changes in

the national flock, in most cases these correlations between traits are manageable if they are known.

A positive finding is that an important wool trait, staple strength (SS), is favourably related to worm egg count (WEC) and eye muscle depth (EMD). Therefore, sheep with better staple strength tend to have better worm resistance (lower worm egg count) and better muscling (higher eye muscle depth). As the correlations are not high, some animals will be better in one trait and poorer in the others, so when selecting rams, check each of the ASBVs for WEC, EMD and SS.

Source: Meat & Livestock Australia



Exciting new work in the Sheep CRC Meat Program has shown that a variety of new traits (still under development) are all moderately to highly heritable (greater than 40%). These include Lean Meat Yield (LMY), Dressing Percentage (DR%), Intramuscular Fat (IMF) and Shear Force (Shear) or tenderness.

As eye muscle depth increases and fat decreases, lean meat yield (the amount of saleable meat as a proportion of the carcass weight) and dressing percentage (the proportion of carcass weight to live weight) both increase. Unfortunately, if selection was just for either LMY or DR% alone then there would be a trend to decrease intramuscular fat (IMF) and increase shear force (Shear) making lamb drier and less tender. IMF, the fat within muscle, also described as ‘marbling’, is a key factor in making meat tender, juicy and flavoursome. So, when IMF drops, the shear force (the amount of pressure needed to ‘bite’ through meat) increases.

While there are some unfavourable correlations here, they are not totally related, therefore selection using the ASBVs for these traits will enable breeders to choose animals that bend the trend and which have a more desirable set of values.

Wool and breech traits have also been studied with the new ASBV for Early Breech Wrinkle (EBWR) released in 2009. It has taken off with a 300% increase in on-farm data since its launch and more rams with these ASBVs are becoming available. The data is a combination of breech, body and neck wrinkle because they are so strongly correlated. For commercial breeders purchasing rams, a more negative EBWR is desirable (indicating fewer wrinkles). In just one cross, a plainer sire can make a considerable difference in decreasing the fly susceptibility of progeny, and there is ample opportunity to choose plain sires that also have the higher fleece weights.

Data on other visual traits has also been collected, and for wool these include colour, character, dust penetration and weathering of the staple; all of these are moderately to highly heritable. Fleece rot has been confirmed to be correlated with visual greasy colour and wrinkle—sheep with yellower wool and more wrinkles are more prone to fleece rot (and

therefore are more susceptible to flystrike).

A new and improved suite of ASBVs is now available for use, with more to come over the next few years. These include prototype breeding values for Intramuscular Fat and Shear Force in mid-2010, followed by wool colour, other visual traits and easy care/fitness traits.

Whether a producer actively selects or not, traits will change, sometimes in undesirable directions. However, ASBVs offer breeders the opportunity to drive their production in their chosen direction, faster and with confidence.



Photo: Deb Maxwell

ABOVE: Dr Alex Ball, Manager, Lamb & Sheepmeat R&D, Meat & Livestock Australia

**More information**

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