SHEEP GENETICS AUSTRALIA

12 CASE STUDIES FROM ACROSS AUSTRALIA
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INTRODUCTION

Sheep Genetics Australia: Genetic improvement for a sustainable and profitable Australian sheep industry facilitated by the world’s best sheep genetic evaluation system.

The use of genetics has become an increasingly important tool in helping Australian sheep producers to improve the productivity of their wool, lamb and sheepmeat enterprises.

Sheep Genetics Australia (SGA) has been developed by Australian Wool Innovation Ltd and Meat and Livestock Australia and is the national genetic information and evaluation service for the meat and wool sectors of the sheep industry.

SGA is comprised of the records of around one million individual Merino sheep, and a similar number of terminal and maternal sire breeds.

The data has been drawn from the combination of Merino Benchmark, LAMBPLAN, CSIRO Select Breeding Services, Merino Genetics Services, Australian Merino Sire Evaluation Association (AMSEA), Central Ttest Sire Evaluation databases and other independent providers.

The core SGA product is the provision and maintenance of a national database for the calculation of breeding values using a single standard for genetic information. These breeding values will be released in the form of trademarked Australian Sheep Breeding Values (ASBVs).

ASBVs are designed to be used by ram breeders and commercial producers to compare the genetic potential of rams and ewes for a range of industry agreed traits, across flocks, independent of the environment and location.

ASBVs will be delivered via MERINOSELECT and LAMBPLAN, which have been designated for the wool and prime lamb sectors respectively.

MERINOSELECT is for Merino ram breeders and commercial wool producers. It is the new brand name for Merino genetic information combining data from the current Merino schemes into a national, consistent and quality assured service.

LAMBPLAN continues as the brand name under which genetic information is delivered to Terminal, Maternal and Dual Purpose ram breeders and commercial lamb and sheep producers.

Brands for other breeds will be developed as they elect to use the SGA.

The case studies in this book are designed to showcase how producers in the meat and wool sectors, both ram breeders and commercial producers, are currently using genetics to aid their breeding and selection systems and improve productivity.

They are all enthusiastic about the development of SGA and are embracing it as a valuable tool in their future commercial and breeding operations.
JOCK MCLAREN, “NERSTANE”
WOOLBROOK, NEW SOUTH WALES

- COMMERCIAL MERINO OPERATION
- EVERY RAM IS SOLD WITH PERFORMANCE RECORDING INFORMATION AGAINST THE WHOLE DROP
- TESTING FOR FIBRE DIAMETER AND FLEECE WEIGHT COMBINED WITH VISUAL ASSESSMENT.
- 60-70PC OF NERSTANE CLIENTS NOW USE PERFORMANCE FIGURES IN SOME WAY TO MAKE THEIR PURCHASING DECISIONS.

“With the amount of people that have left the industry in the last few years, that’s only going to reward the people who have stuck with it and the sooner we get the SGA single genetic database the better.”

Forty years of testing for fleece weight and fibre diameter has paid off in heavier fleeces and a 3.5 micron reduction for New England Merino mainstays, the McLaren family, “Nerstane”, Woolbrook, NSW.

Third generation woolgrower and Merino studbreeder, Jock McLaren says objective measurement has been part of the family business since the 1960s.

“My grandfather was testing wool in a time when visual assessment was the only way people knew,” Mr McLaren said.

“He was way ahead of his time and knew that if you wanted to progress you had to measure because you need figures to prove that you’re getting somewhere.”

The McLarens, including Jock’s father John and brother Hamish, run 10,000 Merino sheep and 500 Hereford, Angus and Charolais breeders on their 2835 hectare property.

They have resisted the widespread move into beef and prime lambs, citing a bright future for those who stick with wool into a new era of genetic gain and objective measurement.

The Nerstane operation began with a 22-micron flock and the challenge has been to meet client needs by bringing down the micron without losing frame and woolcut. Nerstane also has the ability to catch the judge’s critical eye in the show ring and this year took home the Sydney Royal Show broad ribbon for Supreme Merino.

Mr McLaren attributes the family’s success in applying objective measurement to concentrating on just two important traits and retaining visual assessment as an important part of the selection process.

“Visual assessment is still more than 50 per cent of the process and the figures can sometimes be surprising, so you override them – that happens regularly here.”

He estimates 60-70pc of Nerstane clients now use performance figures in some way to aid their purchasing decisions.

“Every ram is sold with performance recording information against the whole drop and we go an extra step and put sires in sire trials against other studs so they are benchmarked against the industry.”

Having grown up weighing fleeces and micron testing, Mr McLaren sees no reason to be daunted by the new practices and information technology.

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Data records begin at weaning when 800-1000 ram lambs and 2000 ewe lambs are shorn and each group is treated identically: all ewes are run as a mob on natural pastures and all rams are grazed on crops and fed.

At 18 months of age, carrying nine months wool, the young sheep are shorn again, their fleeces weighed and tested for micron, yield and other attributes.

This information goes to Advanced Breeding Services at Orange where the animals are ranked and information processed according to performance on the McLarens’ chosen traits of fibre diameter and wool cut. The information comes back in terms of a “dollar production index” and a ranking for each animal.

“The beauty of having all your data and indices presented every year is tracking what you’re doing so you can actually see what you’re achieving,” Mr McLaren said.

A laptop computer has become a fixture in the Nerstane sheep yards during classing when individual animal figures are accessed and used as a selection tool along with visual selection.

Although 32 year-old Jock McLaren has seen the wool industry peak and trough during his working life, he is confident there is a bright future for the “fantastic fibre”.

“It’s like any commodity, wool is going to have its ups and downs and provided we can promote wool and get people wearing it, its got to have a future because it’s natural and the world’s going “greener” and “greener”.

“With the amount of people that have left the industry in the last few years, that’s only going to reward the people who have stuck with it and the sooner we get the SGA single genetic database the better.”
WES KEMBER, GLEAN EITH PARK
GANMAIN, NEW SOUTH WALES

• PRIME LAMB OPERATION AND BORDER LEICESTER STUD
• GENETICS AN IMPORTANT TOOL TO USE IN COMBINATION WITH TRADITIONAL, VISUAL METHODS.
• SHEEP SELECTION BASED ON WEANING RATES, MILKING ABILITY AND GROWTH RATE
• BORDER LEICESTER WEANING RATES NOW 150% AND MERINO 100%.

“For sheep, it’s only logical to incorporate LAMBPLAN and the Merino Genetics service into the industry-wide database Sheep Genetics Australia”

You may as well feed a good sheep as a bad one, according to Wes Kember, and for unseen traits in particular he sees genetic evaluation as the way to ensure there are no bad'uns.

Wes operates a prime lamb operation along 'classic' lines in the northern Riverina sheep/wheat belt country near Ganmain. A 1500 head flock of large framed Merino ewes is run and these ewes are joined with Border Leicester rams to produce the first-cross ewe flock. These in turn are joined with Poll Dorset sires to produce the prime lambs.

‘Gleaneth Park’ also produces winter cereals, beef cattle and is host to a small piggery.

To provide more control over the genetic make-up and hence productivity of the first-cross dams, Wes also runs his own Border Leicester Stud – based on 400 ewes. Some of the rams from this flock are sold, the balance are used on-farm.

Mr Kember says any rams that are brought in from outside studs are carefully vetted for their biological value.

“We buy and use rams in the top 20% of the breed according to the LAMBPLAN estimated breeding value’s to ensure we’re moving forward genetically.”

“I believe in using all the tools available to get the best out of our flock, and there are some traits that don’t show up in visual evaluation, Wes said.

“The keys to profitability for us are weaning rates, milking ability and growth rate, and they are all breeding values we can get from LAMBPLAN.

“The thinking behind that order of priority is that we want the ewes to have as many lambs as possible, then they must properly rear all their lambs, then the lambs need to grow as fast as possible to go off into the market,” he said.

As a result of his selection programmes, Mr Kember says lambing rates have increased considerably, even though his commercial flock is all paddock reared and run.

The Border Leicester stud weaning rate now sits at 150%, and Wes is disappointed if he doesn’t get 100% for the Merino ewes and 125% with the first cross ewes.

“The cattle industry’s been using breeding values for years, and I can’t see why any cattle producer would spend so much money buying bulls without having good figures to check them off against.”

“And for sheep, it’s only logical to incorporate LAMBPLAN and the Merino Genetic Service into the industry-wide database Sheep Genetics Australia,” Wes said.

“The uptake of genetic evaluation needs to increase for sheep too, especially now lamb prices have jumped to another level and the industry’s become more attractive.”

“The keys to profitability for us are weaning rates, milking ability and growth rate, and they are all breeding values we can get from LAMBPLAN.

“We only choose animals that have a sound structure and look good. Then we compare figures to get a sense of their past and likely future performance in those traits we want to improve, Mr Kember said.

The SGA database will be able to produce elite and trait leader summaries, but breeders involved in the system will have full control of whether their individual data is publicly available.

It is hoped that by 2010 the majority of both Merino and meat sheep breeds will be evaluated through SGA.
ANDREW MICHAEL, “LEACHIM”  
SNOWTOWN, SOUTH AUSTRALIA

- WHITE SUFFOLK, POLL MERINOS AND COMMERCIAL FLOCK
- PERFORMANCE RECORDS HELPING TO ACHIEVE RAPID PRODUCTIVITY GAINS.
- MERINO MICRON DECREASED FROM 24.7 TO 19.4 WITH FLEECE WEIGHTS MAINTAINED
- LIVEWEIGHT RECORDS INCREASED BY 20KG AT 12 MONTHS.

“Every other livestock industry has made rapid progress in genetic improvement. We’ve seen how well it can work in the lamb industry. With SGA it can now been done in all sheep breeds.”

Success has led to even more success and enthusiasm for objective measurement on Andy Michael’s wool, meat sheep and grain growing enterprises on ‘Leachim’ near Snowtown in South Australia.

Andy and Rosemary Michael, along with their sons Luke, Stewart and Alistair operate a 375 head White Suffolk stud and a 1200 head Poll Merino Stud on 1800ha in 425mm rainfall country near Snowtown, and a commercial wool growing operation on 6300ha of 250 mm rainfall pastoral country east of Burra.

“We have clear 10-year targets. With the Polls we are aiming to push the boundaries to meet increasing marketplace demands for Merino’s capable of lowering micron yet maintaining fleece weight and also improving carcase attributes and fertility.

“With the White Suffolks, we’re looking to further increase meat yield and select for hardiness and feed-conversion efficiency,” Mr Michael said.

Over the past ten years, the average flock micron in the Poll Merinos has fallen from 24.7 to 19.4, and the across-flock woolclip micron range has been reduced to 1.5 microns. At the same time fleece weights have maintained an average of 7.25kg.

“Our selection programmes have also seen improved hardiness, body weight and better lamb marking and weaning rates.”

In the White Suffolk stud over the same period, Mr Michael says the 12 month of age live weight records for the flock show a gain of 20kg. Post weaning weight breeding values have increased by about 7 kgs in the same period.

“This indicates the high rates of growth are occurring before 7.5 months of age, rather than after maturity. The White Suffolks are increasing their meat yield and hardiness as well as their feed conversion efficiency.”

Andy says his base measure as a breeder is proven financial gain for clients, and that’s being achieved, with clients returning repeatedly and reporting productivity gains.

To achieve ten year goals, the Michael family make good use of best practice methods from across the district, consultancy advice and the LAMBPLAN and Merino Genetic Services objective measurement databases.

The family laptop is now a regular fixture around the farm to measure and record key data, including weights, carcase scans and fleece tests.

“We even conducted some interesting ‘speed tests’ last year to see if we can get an indicator of temperament - based on the principle that sheep that move more slowly through the yards are quieter, easier to handle and are less likely to get stressed” he said.

Overall, Andy says it hasn’t been as hard to achieve the gains as he thought it would be initially.

“By using the combination of advice, objective measurement systems and aiming for targets, we have been able to implement changes and see the benefits - and that success is giving the operation more momentum for go for greater gains,” he said.

“But objective measurement isn’t the ‘holy grail’, our breeding stock are all also visually assessed for conformation, structural soundness and productive traits.

“However, performance records provide an extremely useful tool in making informed decisions and achieving rapid productivity gains.

“The development of Sheep Genetics Australia will make it even easier for the industry as a whole to progress,” Andy said.

“It will make it much easier to interpret and use the data, both in-flock and across-flock, for stud and commercial Merinos and meat sheep.”

Sheep Genetics Australia (SGA) introduces a national standard and single language for genetic evaluation, and is a joint venture between Meat and Livestock Australia and Australian Wool Innovation.

Elite animal summaries will be available from the website, with the ability to search for “trait leader” sheep in the top 10 % band for each ASBV.

“My clients are producing more meat and more wool, of better quality, and so am I,” Andy said.

“Every other livestock industry has made rapid progress in genetic improvement. We’ve seen how well it can work in the lamb industry. With SGA it can now been done in all sheep breeds.”
RICK KEOGH, “AMAROO”  
BARCALDINE, QUEENLAND

- MERINO STUD AND COMMERCIAL WOOL GROWING  
- ALL RAMS AND EWES TESTED USING A COMBINATION OF SUBJECTIVE AND OBJECTIVE MEASUREMENT.  
- BREEDING OBJECTIVES BASED ON HIGHLY MEASURABLE TRAITS THAT DRIVE PROFITS  
- AIMS TO LOWER FIBRE DIAMETER BY 1 FULL MICRON, INCREASE FLEECE WEIGHT BY 10% AND BODY WEIGHT BY 5% OVER TEN YEARS

“If buyer trends continue, and I believe they will, they won't be buying stock unless the traits and figures we provide can be clearly proven, and this is what genetic measurement allows us to do.”

When Rick and Jenny Keogh bought some of the famous Queensland Terrick Terrick Merino stud stock in 2001, they knew they had a great genetic base to work with and nurture.

A firm subscriber to the benefits of objective genetic measurement for nearly a decade, Rick and Jenny relocated 54 stud sires and 2187 stud ewes in lamb to ‘Amaroo’, south of Blackall, Queensland, and renamed the stud stock ‘Terrick Merinos’.  

Mr Keogh began his association with the famous Terrick Terrick bloodline in 1977, starting as a senior jackeroo and then being appointed overseer the following year. In the three years he worked there he gained extensive skills in subjective sheep selection and became heavily involved in helping identify the stud's top sheep.

However it was running his own commercial property in 1996 that he first became aware of the benefits of measuring genetic traits of stock.

“When we first started using objective measurements to class our sheep, it was based solely on micron measurement and traditional visual appraisal,” Mr Keogh said.

“The advantage of combining the various industry genetic databases, (as Sheep Genetics Australia is doing), will create a single language and platform, making indexes much easier to read and understand,” Mr Keogh said.

So firm is Mr Keogh’s belief in genetic measurement he uses a combination of objective and subjective appraisal to achieve the studs breeding objectives. Over a ten year period he is aiming to:

- Lower fibre diameter by 1 full micron;  
- Increase fleece weight by 10%;  
- Increase body weight by 5%; and  
- Maintain structure and confirmation of his stud stock.

These breeding values are designed to increase the value of the wool produced as well as the stock the Keogh’s sell.

The way Mr Keogh sees it, there is little difference in the process buyers go through when buying stock as opposed to buying bales of wool.

“If you are selling wool by highlighting all the traits people want, why wouldn’t you do the same when buying animals?” he asks.

“If buyer trends continue, and I believe they will, they won’t be buying stock unless the traits and figures we provide can be clearly proven, and this is what genetic measurement allows us to do,” he said.
JOHN KEILLER, “CASHMORE”  
PORTLAND, SOUTH WESTERN VICTORIA

• THREE SEEDSTOCK FLOCKS AND A LARGE COMMERCIAL PRIME LAMB FLOCK  
• VISUAL AND GENETIC SELECTION SYSTEMS IMPORTANT  
• LAMING PERCENTAGES INCREASED FROM 9% - 20%  
• STOCK MORE TOLERANT OF INTERNAL PARASITES.

“Tools such as LAMBPLAN are outstanding technologies to improve sheep studs and flocks generally, and I am particularly looking forward to the next development, Sheep Genetics Australia”.

The Keiller family’s Cashmore Park enterprise is at the cutting edge of the prime lamb industry. Three Seedstock flocks are currently run under strict commercial conditions in conjunction with a very large and very productive commercial prime lamb flock.

Cashmore Park is situated 15km west of Portland Victoria in an 830 mm rainfall zone, and it carries 2.8 dse per 100mm of rainfall. Besides a high degree of animal husbandry to cater for the high stocking rate, John Keiller also places a strong focus on genetic selection.

Mr Keiller says the operation has changed significantly in recent times.

“Prior to 1992, Poll Dorset sires and Border Leicester x Merino & Coopworth ewes were the base of our flock - as they were in the district. But looking at the pig and poultry industries, you see that they use composite animals.

“With LAMBPLAN, the national meat-sheep performance recording program, and the Terminal and Maternal Central Progeny Testing Programs, we had a means of introducing new genes to improve flock performance. So we decided to go down that path, and we haven't looked back.”

The three Seedstock flocks consist of a) Composite Terminals (Poll Dorset x White Suffolk x Texels), b) Composite Maternals “Cashmore T winners” (Coopworth, Finn, East Friesian, Border Leicester, St African Meat Merino, Poll Dorset, White Suffolk, Texel and Corriedale genetics and c) Coopworths.

“To many this seems like a large mix, but they are just bags of genes walking around the paddock to me”, John said.

“Tools such as LAMBPLAN are outstanding technologies to improve sheep studs and flocks generally, and I am particularly looking forward to the next development: Sheep Genetics Australia”, John said.

“Once you identify market signals and production systems that suit the environment, you can tailor your livestock to suit and achieve the financial gains as a result”.

“In our case, the lambs now are faster growing with carcass weights of 26kg, high lean-meat yields and optimum fat levels. The highly fertile ewes have lifted lambing percentages by 9% - with the best up to 20% - and all stock are more tolerant of internal parasites.”

“Prior to using estimated breeding values I had a little bit of doubt about seeing the gains on the scale we’ve actually achieved in such a short period of time, but we have all the documented proof here. This gives us great confidence to move forward at even faster rates,” he said.

John estimates the financial gain from lifting his productivity is in the order of $30 per hectare per year compounding. And he says LAMBPLAN has played a significant role in that.

Even so, he says objective measurement needs to be seen as a part of the overall farm management program.

“We can’t ignore the reality that we farmers have to be specialists in assessing livestock quickly with the naked eye - and that form of selection pressure needs to be used alongside genetic information systems as a check and balance. At the end of the day the stock need to be sound and functional and if both selection systems are used, they act to compliment each other.” Though he says the broader industry gains are important to recognize. “Prior to the availability of objective measurement to the Australian lamb industry, relatively small degrees of genetic gain can been seen over time.

“With the use of performance data, genetic gain can be much more rapid. And we’ve got to remember that as costs rise 3% every year, farmers need better animals than yesterday to be profitable, or even maintain a position in the market place.

John believes that the prime lamb industry has embraced LAMBPLAN and will quickly take on board SGA as a more refined tool to position the Australian lamb industry into the future.
Charlie Massy describes himself as “a bit of a scavenger of valuable and relevant gene packages.”

Charlie Massy has taken the theory and practice of Merino breeding to another level by incorporating the needs of wool processors and garment manufacturers in sheep selection.

Mr Massy says the 1820 ha Severn Park Stud on NSW Monaro Plains is at the forefront of the ‘Soft Rolling Skin® approach to merino breeding, and the property will run up to 7,000 head in a ‘normal season’, though the base flock consists of 2,500 ewes and followers.

“We’re working with Dr Jim Watts and we know from processing performance evaluation there is enhanced fabric quality in the wool coming from these sheep,” Mr Massy said.

“Through MLA’s Merino Genetic Services, we are now weighing and scanning stock every year for weight gain, eye muscle depth, fat depth and faecal egg counts while on the fleece side, we objectively measure fibre diameter, standard deviation of fibre diameter, fleece weight and other fibre quality aspects, as well as benchmarking skin physiological traits.

“Over the top of this we impose rigorous visual assessment to ensure the animals are functional and we don’t lose important non-measurable traits” he said.

Charlie Massy says he’s not afraid to look around other flocks to source complimentary genetics.

“We will bring in genetic packages based on objective measurement through EBVs from other studs around Australia. You could say, I’m a bit of a scavenger of valuable and relevant gene packages - which is what good animal breeding is all about really.

“We work out what we need and what other studs’ genetic material can deliver – but to do that we need proven performance data.”

“We have 15 years of full pedigree information on up to 1,000 ewes. This information drives our database and is our most valuable Intellectual Property.”

Charlie Massy says productivity progress across the merino industry has been minimal to static but also it is complicated by the gene and environment interaction in a widely variable pastoral situation.

“However, I believe through using good objective information, the sheep industry has the capacity for productivity improvement equivalent to that seen in other domestic animal breeds.

“I’m not an extreme quantitative geneticist - I just believe that we can combine biology, ecology and good information on genetics so we can endure the constant pressures on farming and so ensure our future. And SGA will give industry more enhanced and precise informational tools with which to do this,” Mr Massy said.
DAWSON BRADFORD, “HILLCROFT FARMS”
POPANYINNING, NARROGIN WESTERN AUSTRALIA.

- POLL DORSET STUD AND COMMERCIAL PRIME LAMBS
- BREEDING VALUES USED AS A BASIS FOR SELECTION ALONGSIDE VISUAL ASSESSMENT
- ALL STUD STOCK MONITORED AND TESTED FOR PERFORMANCE
- POST-WEANING LAMB WEIGHTS UP BY ONE KILOGRAM PER YEAR FOR TEN YEARS.

“SGA will mean anyone can access the latest performance information to assess their own performance and discover where they can acquire the genetics to suit their goals and environment.”

Such is the demand for terminal sires with top performance data, from just one WA Poll Dorset stud there will be a doubling of the number of rams sold to producers this year. In fact most of the 1000 rams to come from Hillcroft Farms, Popanyinning, near Narrogin WA have already been forward sold.

Principal of the family company, Dawson Bradford Snr., has embarked on a major artificial insemination and embryo transfer operation to meet the demand for Poll Dorset Rams.

“We sold some 500 rams last year, this year we have Merino and Border Leicester/Merino cross ewes as surrogates to lamb down a greatly increased number of purebred stud stock.”

“The increased demand is coming from two sectors of the sheep industry. Firstly, wool growers are off-loading wool-cutting wethers and replacing them with ewes to join to terminal sires. Secondly, prime lamb breeders are really focusing on genetics to maximise profits,” Mr Bradford said.

Hillcroft Farms is a 4,000 ha property in a 450 mm winter dominant rainfall region, 30 kilometers from Narrogin, WA. It is an intensive, diversified and highly integrated farming operation focusing on prime lambs, stud stock, winter grains and export hay enterprises.

While Dawson Bradford Jnr now manages the property, Dawson Snr runs the stud enterprise and retains the Chairmanship of the WA Meat Marketing Co-operative, a farmer owned cooperative that focuses on processing and marketing of prime lamb.

The sheep enterprises consists of 3 parts:

- 2,000 21 micron Peppin type Merino ewes for wool and Border Leicester/Merino cross dam production; 1500 Border Leicester/Merino cross ewes as prime lamb dams and the Poll Dorset Stud - which has an ewe base of 1000 head.

However, reflecting the differences in gross value returns from wool and sheep meats, Mr. Bradford said his operation is being changed too.

“Pretty much all the Merino and 1st cross ewes will rear pure Poll Dorsets. From this year on, wool will play a diminishing role in the farm business.”

Mr. Bradford has been with LAMBPLAN since its inception and has been performance recording since 1990.

“The 2004 Poll Dorset drop lambs had an average LAMBPLAN Carcase Plus index of 185- which is an index that measures growth, eye muscle and fat depth. Compare that with back in 1995 when our average lamb Carcase Plus index was 115- it’s gone up near 70 points in ten years.”

He said in productivity terms, his average post-weaning lamb weight has gone up by nearly one kilogram per year for ten years.

“Joining times, animal health and nutrition have remained constant over that period, so the gain of ten kilograms in ten years is due to one thing: constant selection for superior genetics”.

“But Mr Bradford says its not all just objective measurement.

“We use EBVs as a basis for selection alongside visual assessment – which is essential to confirm structural soundness But we analyse performance data on any stock brought into the stud: we’re not investing in looks; we’re investing in performance.

All stud stock are monitored and tested - both ewes and rams – for performance through LAMBPLAN which also maintains all of the data records for the flock.

The Bradfords are active participants in the show circuit believing it is vital to benchmark livestock and to keep in touch with industry needs and trends. It is also a good promotion and marketing avenue. However, Mr Bradford believes it is essential that show judging must include performance data to make judging assessments in the future or the show ring will rapidly lose importance to the needs of the commercial sheep industry.

As regards the future, he believes Sheep Genetics Australia will provide an accurate and objective tool to use in animal selection.

“It’ll mean anyone can access the latest performance information to assess their own performance and discover where they can acquire the genetics to suit their goals and environment. SGA is long overdue. And really, you’ve got to appreciate all the work that’s gone onto SGA, it will achieve something quite major in our industry,” he said.
ROBERT MORTIMER, “DEVONDALE”
TULLAMORE, NEW SOUTH WALES.

• MERINO STUD AND COMMERCIAL WOOL-GROWING
• USE OF GENETIC DATA BASES FOR OVER TEN YEARS
• FLEECE MICRON DECREASED FROM 22.5 MICRON TO 18 MICRON
• FERTILITY LEVELS INCREASED BY 30% OVER 24 YEARS

“There’s a saying around the Merino industry: “if it can be measured, Robert Mortimer has measured it”.

Robert Mortimer is a part-owner and manager of a Merino Stud and wool-growing operation on an 1800 ha aggregation in the Tullamore district of Central-West NSW.

Specifically, he is the Technical, Nucleus & Breeding Manager for Centre Plus Merinos Pty Ltd, on “Devondale”, Tullamore, and several other sites around Australia.

Centre Plus began in the early eighties as a group of people who joined together to produce more profitable sheep genetics. The core breeding program is based on the assumption by founding members that a self-replacing dual purpose merino flock has the best potential to continually increase the bottom line profits of breeding shareholders.

Mr. Mortimer says over the years the program has evolved and developed after experimenting with various genetic evaluation strategies and products.

“We now know how our own sires perform against the best in Australia for the traits measured in a commercial environment, and this confirms the power of our breeding program to identify the truly elite animals, which in turn allows us to make continual predictable genetic progress, in our chosen direction.”

Mr. Mortimer was one of the first users of genetic databases and has been using Merino Genetic Services (MGS) as a tool to record genetic traits with his stock ever since.

“I first heard about genetic evaluation systems when it was presented to the Australian Merino Society. I was keen for the industry to be involved as I believed that we could achieve increased profitability through faster genetic change,” Mr. Mortimer said.

Like some other Merino breeders who are involved in performance recording, Robert Mortimer uses both the MGS and Merino Benchmark databases to grade stock.

Sheep Genetics Australia (SGA) will combine the two systems to produce one dataset and language.

Mr. Mortimer says it’s vital to ensure correct performance recording information is entered in the database.

“I check the information all the time to ensure accuracy and when I compare the figures I am generally highly impressed”.

“Genetically speaking, all traits are changeable and the more information you have on the animals the more accurately you can change their traits. How quickly you change them depends on the selection pressure placed on each trait”.

“By focusing on just two traits, my fleece has gone from a 22.5 micron to 18 micron, which is a considerable achievement. The fleece weights are also much better”.

Over the past 24 years, by selecting for it, Mr. Mortimer has seen fertility levels increase by 30% and consequently that has a great bearing on profitability.

But the Centre Plus flock is also a dual-purpose flock, and Mr. Mortimer says a focus is also on carcase characteristics.

“1999 saw the commencement of EMD (eye muscle depth) and fat measurements. And we’re making large progress in that area too”

Also in 1999, Centre Plus became the first Merino Stud to use the LAMBPLAN – MGS, TGRM (Total Genetic Resource Management) mating program. This program allows the stud breeder to control inbreeding, while making even faster genetic progress.

All sheep are taken through the complete analysis and before selection, have to meet rigorous visual standards.

All wool traits including softness, crimp, colour, luster and nourishment are measured and / or scored.

“Linked Breeding programs will almost certainly become an essential tool in the sheep industry, to know where we are genetically and where the elite genetics can be found”.

“Genetic databases can also be used as a marketing tool, as a tool to compare your stock against others in the market or to buy other sheep”.

“Once you have learnt the basics of managing a database, accurately taking measurements, and setting management groups, using a system such as SGA should be easy to keep up with”.

“New breeders can get their sheep up to a high standard, to compare with others in the industry in no time, and I look forward to the availability of Sheep Genetics Australia to include in the management of the Centre Plus programme,” Mr. Mortimer said.
PHILIP RUSSELL, “CLIFTON”  
BROOME HILL, WESTERN AUSTRALIA

- SHEEP CLASSER AND SOUTH AFRICAN MERINO MEAT SHEEP (SAMM) STUD.
- USES OBJECTIVE MEASUREMENT WITH VISUAL APPRAISAL
- REDUCED FLEECE MICRON FROM 23-26 TO 20-21 OVER EIGHT YEARS.
- INCREASED FERTILITY AND IMPROVED NUMBERS OF LAMBS WEANED PER EWE.
- RAPID INCREASES IN GROWTH RATES AND EYE MUSCLE AREA, REDUCED FAT COVER

“I think the ASBVs will take industry to another level, as they’ll take the guesswork out of indexing and selecting stock.”

With a watchful eye on two industry sectors, sheep classer and South African Meat Merino sheep (SAMM) breeder Philip Russell is well placed to observe the values of objective measurement in Australian sheep industries.

Philip has been using objective measurement procedures on his stock and on his clients’ stock for nearly 20 years, and has found it to be a valuable breeding tool.

“In my role as a classer, and prior to the Optical Fibre Diameter Analyser 2000 (OFDA 2000), I was simply using scales to measure body weight and recording that along with all the fleece data I could gather,” he said.

“Currently I use the data collected from my Merino stud clients to monitor trends for body weight, micron, wool type, fleece weight and a host of other information to isolate different families within the stud.

“Gathering this level of data helps the studs to identify different traits in the families and decide which direction they would like those families to go genetically”, he said.

Through his work Philip is finding ram buyers are increasingly demanding objective measurements to assist in their selection process, including body weight, micron, clean fleece weight and coefficient of variation.

As for his own stock, Philip has seen direct benefits from using breeding values and genetic data in the selection of his own SAMMs ewes and sires.

“The opportunity is there to make big gains from using objective measurements, though they are best used in conjunction with traditional visual appraisal methods,” Philip said.

“We’ve been able to increase growth rates, increase eye muscle area, reduce fat cover, increase fertility and improve the number of lambs weaned per ewe.

“And by using LAMBPLAN with our SAMMs we’ve been able to achieve those significant gains easily and quickly, which is extra important in establishing new breeds.

“I have also seen 23 to 26 micron-producing flocks lowered to 20-21 microns over an eight year period, without losing fleece weight and body weight!

“This means we can achieve far bigger returns per hectare, which is a great result for any producer,” he said.

Philip believes the introduction of Sheep Genetics Australia’s (SGA) Australian Sheep Breeding Values (ASBVs) will benefit the entire industry, both commercial and stud breeders and buyers.

“Objective measurement is a great tool, and having worked with it for nearly 20 years I am fairly familiar with it, but even I am still learning all the time, though the principle is gaining such wide acceptance”, Philip said.

“I reckon something like 80% of my merino clients are now using OFDA 2000 while they’re classing; ten years ago maybe 5% of my clients were making those sort of measurements – that sort of uptake speaks for itself.

“Though I think the ASBVs will take industry to another level, they’ll take the guesswork out of indexing and selecting stock.

“The ASBVs will also be a way to link Quality Assurance programmes that currently exist throughout the industry and guarantee Australian sheep meat and wool products.”

Sheep Genetics Australia is a joint venture between Meat and Livestock Australia and Australian Wool Innovation aimed at boosting productivity in the industry.

It includes the development of a single national language, Australian Sheep Breeding Values (ASBVs), for traits that have commercial impact. ASBVs will be underpinned by standards for linkage, accuracies and QA principles, and they will enable the provision of elite and trait leader summaries.
“SGA is one of the main tools we will have available to give reliable genetic evaluation across breeds and flocks to enable us to lift our productivity.”

Making full use of sheep industry genetic information systems has allowed Roger and Dianne Trewick of Victoria to move their prime lamb and stud ram enterprises to elite levels.

The Trewick’s ‘Pepperton’ Poll Dorset stud and prime lamb operation is situated midway between Bendigo and Echuca in Central Victoria. The business is conducted on a 720 ha property with a long term average annual rainfall of 475 mm and their operation consists of two key parts: the Poll Dorset stud and the prime lamb producing flock.

The Stud supplies top line terminal sires to the crossbred ewe flock, which is based on a first-cross East Fresian/Border Leicester and Merino flock.

While the Trewicks are looking forward to using the new Sheep Genetics Australia database, they have been successfully using LAMBPLAN for the past 12 years, and Roger says over the past 6 years, there has been a very large jump in productivity and genetic indexes.

“We’ve seen significantly higher muscling levels, better growth rates and lower fat levels in the stud sheep, the dams and the sale lambs. We monitor growth rates, fat levels and muscle depths right throughout the production process.

“And the figures speak for themselves: our sale lamb carcase weights have moved from the typical old ‘supermarket’ type lamb of 18-20kg up to export grade and weight lambs of 24-30 kg – in a relatively short period of time and without supplementary feeding, as the lambs are finished on dryland lucerne.”

The entire ‘Pepperton’ drop of prime lambs is sold privately on-farm.

“To put it another way: when we started testing on LAMBPLAN, our across flock Carcase Plus measurement index averaged out at 105 points; but in our 2004 drop lambs, their Carcase Plus index averaged 176 points. That index is made up of Post Weaning Weight measurement values for growth (60%), muscling (20%) and fat depth (20%).

“So either way you look at it – the traditional way or the LAMBPLAN way - you can see objective measurement is doing the right job for this operation.”

Roger and Dianne said much of the index jump has occurred over the past 6 years since they started using AI and semen from Western Australian, Victorian, NSW and New Zealand studs with superior genetics for growth and carcase characteristics.

All Poll Dorset rams are assessed visually for structural and conformation before they are introduced into the Stud, and the Trewicks believe this is very important.

“There’s no sense using a ram if he is not structurally sound as you can end up introducing sway-back, undershot jaws and the like into the flock. A ram with high index attributes doesn’t by itself mean that he’s got everything you need or want,” Roger said.

As far as sale rams are concerned, the Trewicks have observed a demand for performance tested seedstock.

“Lately, repeat customers are buying up to 20 rams at a time. It’s interesting to note that before we started genetic evaluation through LAMBPLAN in our selection and breeding, we were selling around 60 to 80 rams a year. We are now selling in excess of 200 – at improved prices.”

Roger believes with the advent of the new industry-wide performance recording database Sheep Genetics Australia carcase quality and yield as well as lamb growth rates can now be replicated consistently from stud stock around Australia, and he says using objective measurement to assess livestock is a proven way of lifting productivity and profitability on farms.

“Farmers into the future have to be more savvy in everything that they do – and SGA is one of the main tools we will have available to give reliable genetic evaluation across flocks and breeds to enable us to lift our productivity.

“The use of genetic databases and performance recording is already an important part of the sheep industry in Australia, though it will become more so in the years ahead. Just look at the Angus cattle breed – it’s a prime example of what can be achieved by using genetic evaluation with almost total acceptance by that breed society of BREEDPLAN, the cattle equivalent of LAMBPLAN”, Roger said.

the cattle equivalent of LAMBPLAN”, Roger said.
JAMES LITCHFIELD, “HAZELDEAN”
COOMA, NSW

- MERINO STUD AND COMMERCIAL WOOL PRODUCTION
- GENETIC INDICES USED TO HELP SELECT ON A COMBINATION OF MEASURABLE DESIRED TRAITS
- FIBRE DIAMETER LOWERED BY TWO MICRONS IN 10 YEARS
- CONSISTENTLY HIGH FLEECEWEIGHTS WITHOUT BLOWING OUT FIBRE DIAMETER

“There is a diversity of opinion among stud Merino breeders as to the value of objective measurement but I’m certain the single genetic database will deliver much to Merino breeders wanting to choose sires based on specific traits”

For five generations the Litchfield family has run its renowned Merino stud, Hazeldean, Cooma, NSW under the maxim that ‘genetics drive profit’.

Hazeldean Pty Ltd – now running 45,000 sheep and managing landholdings in four states – is an old stud with a fresh attitude.

The stud was founded in 1865 and selection based on measured performance began at Hazeldean in 1954 under the direction of Jim’s grandfather, James Francis, and later his father, James.

So it is little surprise that the fifth generation Litchfield to take the helm of the hefty enterprise, Jim Litchfield, says a single genetic database will drive the wool industry towards a brighter future.

“There is a diversity of opinion among stud Merino breeders as to the value of objective measurement but I’m certain the single genetic database will deliver much to Merino breeders wanting to choose sires based on specific traits,” Mr Litchfield said.

“Buyers must know what one ram or one bloodline is capable of delivering over another in terms of productivity per head.

“Until we get this sort of specific information, which is impossible to deliver without the use of numbers, the industry will continue to endure the glacial rate of progress that has been a feature of the breed for the past 50 years.”

Hazeldean’s track record in gains made via objective measurement is impressive: the stud has dropped its fibre diameter by two microns in 10 years and ewes now cut 7.5 kilograms of 19.5 micron wool on average.

An elite flock of 2000 three to six year-old ewes has a fibre diameter range of 17.5-19.5 micron.

“Performance testing has definitely delivered all it promised for Hazeldean and we’re very satisfied with the results we’ve achieved,” Mr Litchfield said.

“It can definitely be used by the whole industry to improve genetic merit.”

Mr Litchfield says Merino Benchmark (an across-stud performance evaluation of sires and rams), Central Test Sire Evaluations and wether trials have all been used to assess Hazeldean’s performance against other Merino bloodlines.

“The best looking and best performing ram is completely useless if he doesn’t produce progeny better than himself,” Mr Litchfield said.

“The only way to tell whether a ram or bloodline is breeding well is to undertake a progeny test and assess all offspring for the traits that matter most to your breeding goals. That is the basis of Merino Benchmark, Central Test Sire Evaluation and other performance programs.”

Performance testing at Hazeldean hinges on an adjustable index – a calculation that determines selection priorities.

“Rather than trying to weigh up fleece weight, fibre diameter, body weight and possibly many other traits in your head and then apportioning the correct value to each when selecting sheep, it is possible to combine all measured traits and present them as one figure or index, “Mr Litchfield said.

“In addition to making the job of selecting much easier, it is possible to place more emphasis on one particular trait over another when calculating the index. This way you can push your flock in the direction you want it to go much more easily.

“At Hazeldean, we want to reduce fibre diameter at a faster rate than we increase fleeceweight so we place a 12pc premium on the value of fibre diameter when we calculate our index.

“We also want to increase staple strength. As staple strength and coefficient of variation of fibre diameter (CV) are correlated traits we include in our index calculation an emphasis on lower CV. This system ranks animals on their capacity to reach our breeding objective as quickly as we possibly can.”

Hazeldean also selects for fertility, worm resistance, growth rate and carcase value.

He says visual selection to remove obvious faults is paramount before selection pressure is applied to improve productive characteristics.

Mr Litchfield says it took about 10-15 years for his clients to make the best use of the figures provided when buying seedstock but he believes the single Sheep Genetics Australia database will make it easier for producers generally to use objective measurement.
LYNTON ARNEY, “IN VERBRACKIE”  
STRATHALBYN, SOUTH AUSTRALIA

- BORDER LEICESTER STUD AND COMMERCIAL FLOCK
- PERFORMANCE TESTING FOR THE LAST 15 YEARS
- OVER THE LAST 10 YEARS AN AVERAGE INCREASE IN EBV FOR POST WEANING WEIGHT OF OVER 3 KG
- NUMBER OF LAMBS WEANED EBV HAS RISEN BY NEARLY 5%.

“SGA is the dawn of the future, allowing sheep breeders to be in control of the path taken to achieve their chosen breeding objectives”

South Australian Border Leicester breeder, Lynton Arney believes Australia’s meat-sheep genetic evaluation system ‘LAMBPLAN’ is the best in the world.

Mr Arney is well placed to make this bold statement: he was selected by the Nuffield Farming Scholars Association to travel overseas in 2002 to investigate other key animal breeding technologies, systems and structures.

After assessing those used in Europe, North America and New Zealand, Lynton Arney says that by comparison, LAMBPLAN is world best technology for overall effectiveness and providing accurate data from multiple information sources.

However, on ‘Inverbrackie’, Strathalbyn, South Australia, Lynton says the on-farm productivity benefits have convinced him of the worth of performance recording.

“We are able to link across flocks so that we can compare within the breed - in other words we are not just improving our stock, but the Border Leicester breed itself is improving at a fast rate. It's also a way of ensuring the progeny are actually better every year.”

“The genetic trends have shown improvement in all traits, for example, over the last 10 years we have achieved an average increase in estimated breeding values for Post Weaning Weight of over 3 kg, while our number of Lambs Weaned value has risen by nearly 5%. To achieve this rate of gain is particularly pleasing as we aim to make progress in several traits at once,” he said.

“I have another way of measuring this progress, which is to compare our average index ram of today with the average index ram from 10 years ago. When today’s ram is joined to 40 ewes each year for five years, the extra weaned lambs and weight gains amounts to an additional $1860 from that ram’s progeny.”

“This means our genetic gain has contributed to the lamb industry $186,000 per 100 rams produced.”

“I have also held the position of the Chairman of the Australian Border Leicester Association and during that time was involved in the setting up of a group called SuperBorder. All the members have genetic linkages allowing genetic comparison between the flocks. The rams with performance data which exceed the groups specifications are labeled with a SuperBorder tag. They are basically the top of the crop within that group,” he said.

“And we are marketing these above average rams to help the commercial producers identify and use their better maternal genetics.

Mr Arney says he has seen many improvements in the genetic database.

“...Being able to describe traits which cannot be seen, like number of lambs weaned, is very powerful. Performance data and indexes have become more accurate as LAMBPLAN has developed and this has driven many improvements for sheep farming in Australia.”

Mr Arney says the new single genetic database Sheep Genetics Australia (SGA) will be beneficial for all breeds.

“If I was a Merino breeder I would be very excited about all that SGA has to offer. A single database will solve the problem of having four or five options, which might run different information. As a Border Leicester breeder though, I expect the same great service I have been experiencing, if not better.

“SGA is the dawn of the future, allowing sheep breeders to be in control of the path taken to achieve their chosen breeding objectives. Selection based on visual characteristics has served the industry well over a long period of time, but it can be hard to allow for different feeding regimes and pre-sale preparations when comparing sires by their looks in a sale ring or at an auction. And you can't always be sure how the progeny of these sires will perform back on the farm. But at the same time, we all appreciate there are unmeasured important structural traits which can be overlooked if performance data is used exclusively,” he said.

Mr Arney recommends growers seek advice to understand the full potential of SGA and its information.

“Sheep farming in Australia wouldn't have a sound future without SGA. The cost squeeze on producers means that if we are standing still, we are going backwards. This technology allows us to stay competitive”.
FOR MORE INFORMATION SGA YOU SHOULD REFER TO THE WEBSITE AT www.sheepgenetics.org.au

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