Sheep CRC Practical Wisdom Notes

Document ID:	SheepCRC_25_52
Title:	The cost-benefit of a Merino Flock Profile test and importance of knowing sourcing stud's rate of genetic gain
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Key words:	sheep; dna tests; asbvs; genetic gain

It should be cited as:

Tom Granleese and Julius van der Werf (2018) – *The cost-benefit of a Merino Flock Profile test and importance of knowing sourcing stud's rate of genetic gain*

SHEEP CRC
Sheep CRC Practical Wisdom
Know it. Do it.

The cost-benefit of a Merino Flock Profile test and importance of knowing sourcing stud's rate of genetic gain

By Tom Granleese and Julius van der Werf, University of New England, Sheep CRC

Key messages

- The Flock Profile test returns genomic breeding values on an ASBV scale
- Currently for Merinos only
- Sample 20 randomly selected lambs from the latest drop
- Use Flock Profile results to make better ram purchasing decisions
- Track ram teams on RamSelect.com.au to monitor rates of genetic gain

What is a Flock Profile Test?

The DNA Flock Profile test estimates the average genetic merit of a Merino flock or drop which can be compared to the Sheep Genetics database. Flock Profile results deliver genomic breeding values for key Merino production traits on an Australian Sheep Breeding Value (ASBV) scale. This allows Merino producers to track the genetic progress of their flock and make better ram buying and selection decisions. Refer to the online video on our YouTube channel for further information.

The Flock Profile test has been scientifically validated with industry data, matching Flock Profile data to historical ram team information and measurements of performance taken in a wether trial. Pilot project participants were overwhelmingly positive about the information received and how it could be used to take their commercial Merino breeding program forward.

The test requires Merino producers to randomly select 20 ewes in a single year drop. They can either use blood cards or tissue sample units (TSUs) to collect the samples. Results are returned within 8 weeks of samples and payment being received by the SheepDNA office.

Flock Averages on *11/01/2018*

Print Flock Profile Report

ASBV	Description	Units	Flock Avg.	Flock Percentile	Industry Avg.	Industry Min.	Industry Max.
yfd	Yearling Fibre Diameter	µm	-0.2	90	-1.1	5.7	-6.2
ysl	Yearling Staple Length	mm	11.7	20	6.3	-23.7	32.4
ycfw	Yearling Clean Fleece Weight	%	11.3	60	12.4	-46.4	43.7
pwt	Post Weaning Weight	kg	4.7	20	2.3	-8.8	12.3
ywt	Yearling Weight	kg	6.6	20	3.8	-11.2	18.2
pemd	Post Weaning Eye Muscle Depth	mm	0.8	30	0.1	-2.9	4.0
fp_index	Fibre Production Index	score	114.0	90	126.0	30.5	171.7
mp_index	Merino Production Index	score	128.0	70	132.3	44.4	185.6
dp_index	Dual Purpose Index	score	128.0	40	124.8	50.8	179.4

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Figure 1: Flock Profile report in RamSelect.com.au in tabular form

Figure 2: Flock Profile report in RamSelect.com.au in graphical layout

What to do with the results and how to find rams that suit your breeding objective

Once you or your client have the results, you should use them as a guide to purchasing replacement rams or even an entire new ram team (if affordable). A list of potential ram candidates should be made prior to ram buying day with specific criteria being met. Potential rams should have better breeding values than the Flock Profile breeding values (and/or current ram team) for key traits and/or selection indexes that are important for your breeding objective. It is important to remember that a ram team average is more important than individual rams themselves. This can be managed in a RamSelect.com.au account.

Tracking ram teams over years

Flock Profile is great tool for working out your starting point when investing in sheep with ASBVs. Using it in conjunction with the RamSelect.com.au Ram Team Manager allows you to make sure your commercial flock is genetically improving each year. The Ram Team Manager requires you to enter a ram's 16-digit identification number, when they were first used and when they exited (died/culled) the breeding program. The Ram Team Manager is directly linked to the Sheep Genetics database which means your Ram Team average ASBVs are always up-to-date (so no more copy and paste into Excel from MERINOSELECT!). Tracking ram teams and improving the genetic merit of your ram team each year can have a significant impact on the bottom line of your sheep enterprise.

Payback period for a Flock Profile Test

If you were to replace 40% of your ram team, the earliest payback period generated by extra income from improved genetic performance would be 18-24 months. This is due to the timeline of 3 months from collection to results, 1-3 months to make a ram team purchase, 5-7 months for lambs to be born and 8-18 months to capitalise on improved performance via genetic gain. The breakeven point relies on economies of scale to recoup the cost of the Flock Profile test.

Table 1 demonstrates that performing a Flock Profile test on small flocks (500 or less) means that a new ram team would have to be 30-40 percentiles higher than your Flock Profile value. However, as flocks of Merinos get larger, the genetic superiority of purchased ram teams does not need to be as high to reach a breakeven point. Further to this, the larger flock can earn substantial amounts of money from larger jumps in genetic superiority of ram teams (Table 1).

Table 1: Net present value ($) 24 months after Flock Profile test and initial ram team purchase (assuming 40% ram team replaced). Values are derived from

Merinos bred (n)	Ram team bought 10 percentiles higher than Flock Profile index ranking	Ram team bought 20 percentiles higher than Flock Profile index ranking	Ram team bought 40 percentiles higher than Flock Profile index ranking	Ram team bought 60 percentiles higher than Flock Profile index ranking	Ram team bought 80 percentiles higher than Flock Profile index ranking
500	-480	-80	720	1,520	2,320
1000	-80	720	2,320	3,920	5,520
2000	720	2,320	5,520	8,720	11,920
3000	1,520	3,920	8,720	13,520	18,320
5000	3,120	7,120	15,120	23,120	31,120
10000	7,120	15,120	31,120	47,120	63,120

Note that there will be no payback for Flock Profile if ASBVs are not used to make ram purchasing decisions.

The importance of improving your ram team average each year

It is vital for a commercial producer to have an understanding of how quickly a flock will improve with better rams. The gene flow will depend on how long the rams and the ewes are used - the longer they are retained, the longer it takes before new genes flow through the complete flock. Typically a commercial flock will be some years behind the genetic level of the stud. This is called a 'genetic lag'. Figure 3 shows how that lag occurs, its typical length and what it depends on. You would expect the stud to be continually improving, so every year the rams that they sell will be (on average) better than the year before. A commercial producer that buys rams from this stud will improve at the same rate, but it will lag several years behind (Figure 3).

If a commercial producer started at a very low level (80th percentile (grey line Figure 3)), then the benefits would be larger in initial years, but ultimately the genetic lag is the same. This is why sourcing rams from studs achieving good rates of genetic gain in traits or breeding objectives similar to your own is important. Your decisions about where to buy rams determines your genetic journey.

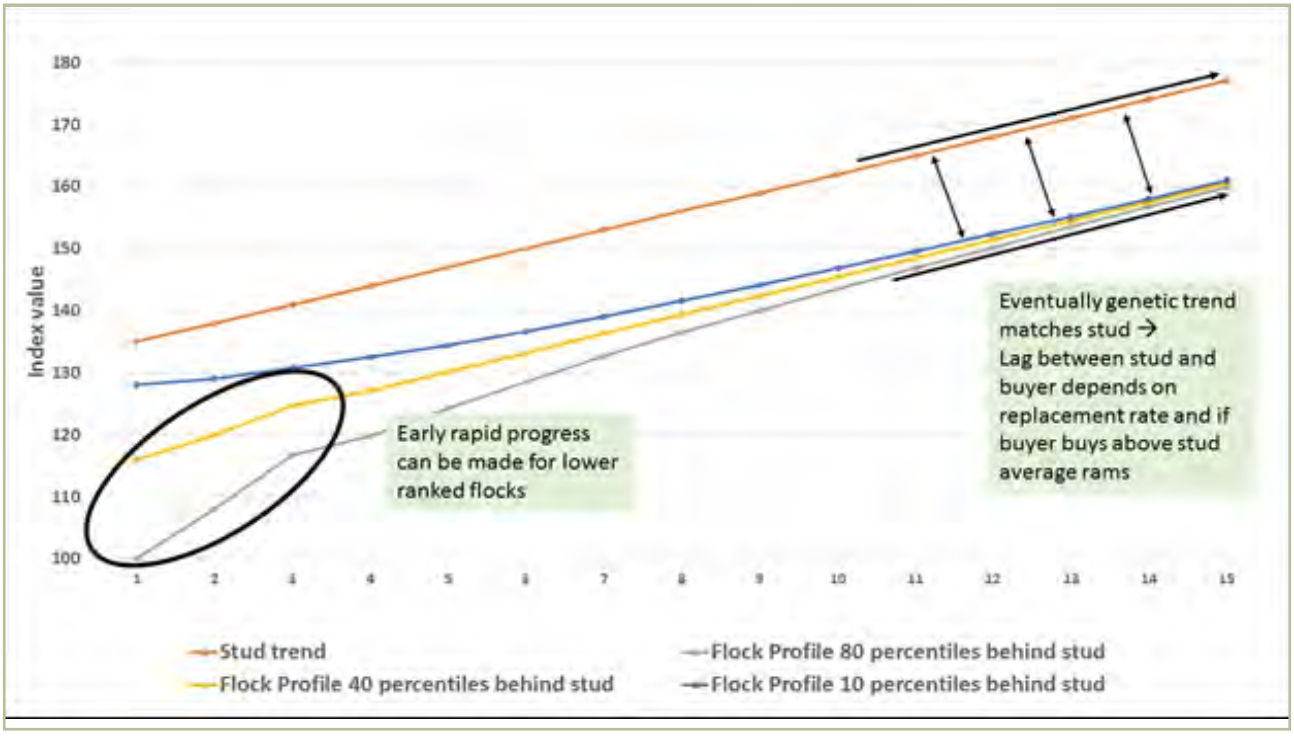


Figure 3: Commercial flocks will achieve genetic progress similar to their source stud. The gap between stud and commercial flock depends on the genetic lag

Figure 4 demonstrates the cumulative net present value from increased rates of genetic gain in a 2,000 head commercial Merino flock sourcing rams (assuming no difference in cost of purchasing rams) from studs that are achieving differing rates of genetic gain. If you have 10,000 sheep then multiply the y-axis by 5. We can observe commercial flocks sourcing rams from studs that are achieving 2-6 index points per year earn 107-526% more net profit from genetic gain than a stud achieving 1 point per year. Some Merino studs are constantly achieving 6 index points gain per year. As a customer you can ask a stud for their genetic trends issued by Sheep Genetics. Some studs freely show their trends on their websites.

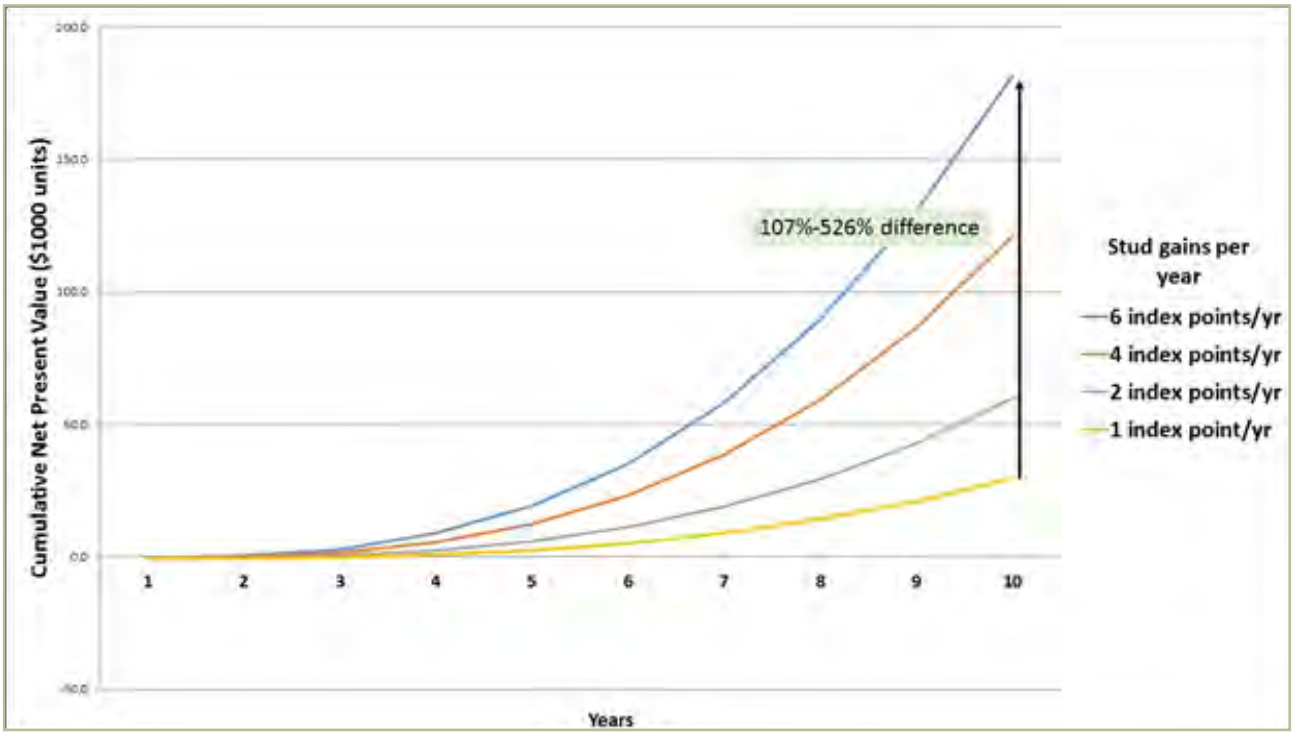
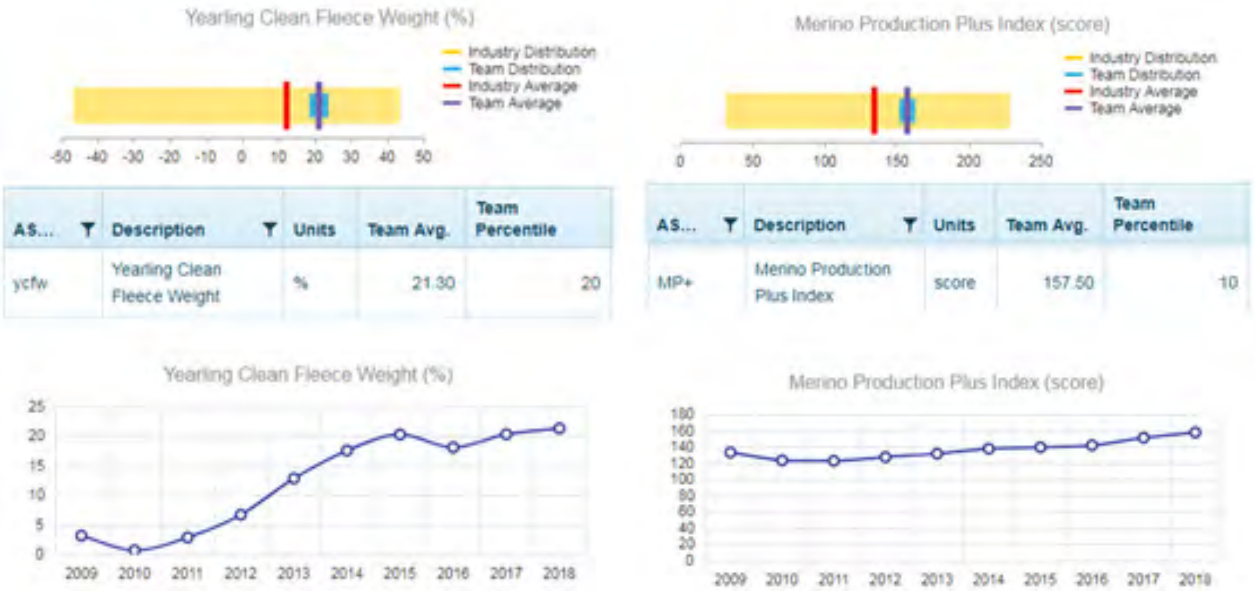


Figure 4: Cumulative net present value derived only from increased rates of genetic gain in a 2,000 head commercial Merino flock sourcing rams (assuming no difference in cost of purchasing rams) from studs that are achieving differing rates of genetic gain.

Ram Team Manager

The Ram Team Manager on RamSelect.com.au allows you or your client to track their ram team(s). This tool is a simple way to ensure that your ram teams make genetic progress each year. Figures 5A and 5B show ram team averages over years for traits and indexes. Ram team average ASBVs are always kept up to date given the direct pipeline between RamSelect and the Sheep Genetics database.



Figures 5: A) RamSelect.com.au Ram Team Manager display yearling for clean fleece weight trait. B) Ram Team Manager display for Merino Production Plus Index

Figure 6 demonstrates the value to a flock from increasing the ram team average by a modest 2 index points per year. Increasing ram team merit is possible by tracking ram teams. Sourcing rams that will improve your current ram battery by two index points is easier if the stud is achieving rates of genetic gain in excess of 3 index points per year.

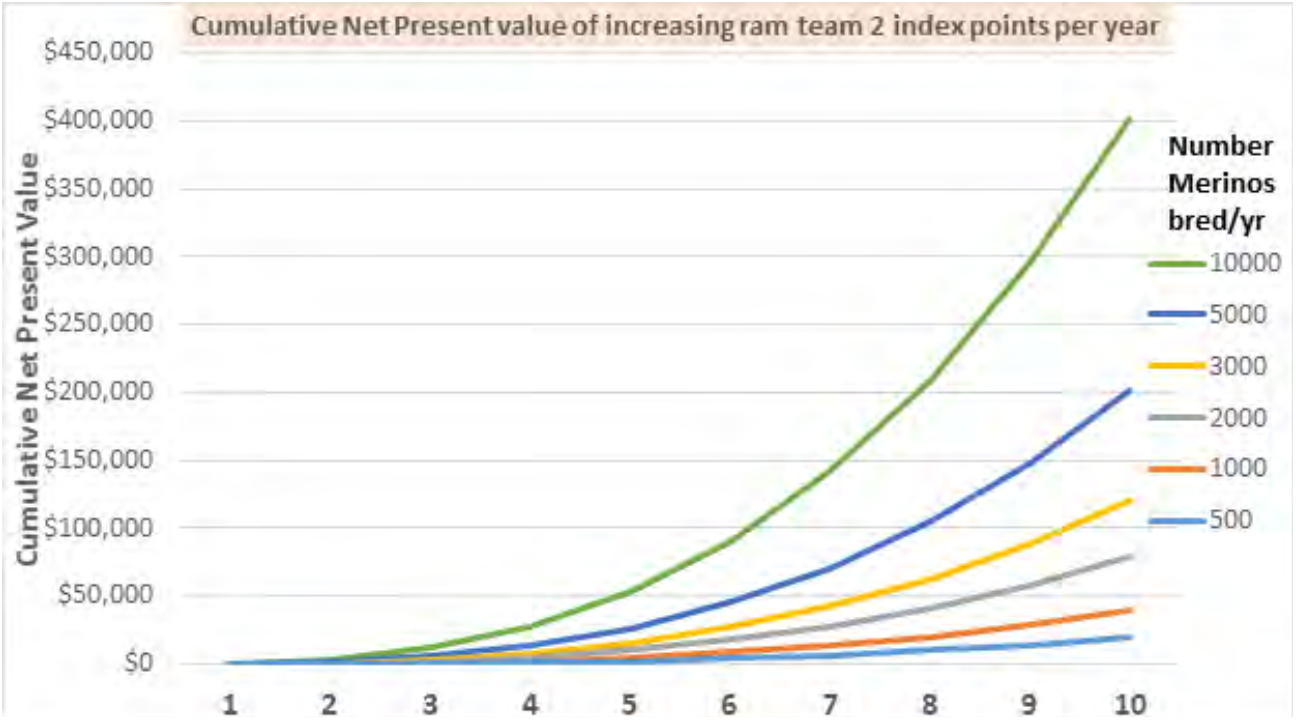


Figure 6: Cumulative net present value of differing sized flocks increasing their ram team average by 2 index points per year

Summary

The DNA Flock Profile test is an excellent starting point for identifying how your commercial Merino flock benchmarks against the MERINOSELECT population. It allows more precise, targeted and profitable ram purchasing decisions to be made. The earliest payback period is 18-24 months. Using the Ram Team Manager in RamSelect.com.au is an excellent way to track ram teams and ensure genetic progress and greater profits each year.