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GENETICS FOR SELF-REPLACING MATERNALS: PARADOO PRIME

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INTRODUCTION

2021 marks the 25th year of farming sheep in my own right and also as a partnership with my wife Georgie. Since arriving back on my parents' property in 1993 I have been involved primarily in self replacing maternal ewes founded originally with Romney ewes over Merino ewes then progressing into a Coopworth sire over merino ewes in 1993. I purchased my first rams in 1993 from Don Pegler and also some rams from John Keilor. All these rams were performance recorded and from that initial introduction into seeking genetics for our flock, I have never bought animals without Lambplan or Merino Select breeding values. We farm in a 600 mm rainfall zone and over the last 25 years, we have built a farming operation that now covers over 1500 ha whereby we wean in excess of 11000 lambs annually and market 500 plus rams. Just under 90% of this land has been purchased by us and 75% purchased in the last 10 years. I began financial benchmarking our farm business in 1997 and we still do to this day through the long-standing Livestock Farm Monitor Project administered by Agriculture Victoria. Our business and asset base have expanded significantly from modest beginnings and to achieve this not only takes hard work but it also takes discipline, planning and setting some clear and achievable goals. Benchmarking can be an important reference to this by outlining the main profit drivers to keep in check.

We believe strongly that the maternal flock we have had all our farming career based solely on performance genetics has been integral to the expansion and success of our business.

Efficiency in all aspects of what we do is something that has been a forced discipline. We strive to being active participants in our farming industry but also our local community. Time is at a premium for all of us. The key components of our efficiency are based on the production system that suits us as managers but also suits our environment in which we farm. We have invested heavily into farm infrastructure and land development all which is underpinned with achieving our production goals easier and more effectively.

Our farm 'Cobbity'. The 1340 grazable/arable hectares are subdivided into 125 permanently fenced and water reticulated paddocks. An additional 45 paddocks are added temporarily to reduce mob size during 3 separate strategic lambing's. Lamb survival is something that is paramount to our operation that essentially prides itself as consistently producing some of the most successful paddock lamb survival results in Australia.

In 2006, we decided to start a maternal stud (called Paradoo Prime) based on Coopworth genetics. The first main drivers of this decision grew from curiosity and the desire to collect data from our sheep in our environment. Secondly, we had experienced greater seasonal volatility and we believed we needed to develop a sheep more suited to our shorter growing seasons. From 2008 we deliberately drove towards what we believed was more balanced maternal sheep.

We discovered the importance of reducing mob size in 2005 when leasing grazing country and have pregnancy scanned our flock for multiples since 1995. Raising triplet lambs commercially has been a particular focus in recent years and these commercial animals have been differentially managed for the past 8 years. For the past 15 years we have managed twin bearing ewes in mob sizes under 100 ewes and for the past 9 years our twin mob size has averaged under 50 ewes. Our commercial flock ewes bearing triplets lamb in average mob sizes of no more than 18 ewes.

We now have developed a system of lambing which we feel can lead the future of lambing management. This system is called Paradoo Precision lambing. This program has improved the

management of reproduction with some outstanding results in variable seasons on multiple properties over the past 6 years. This system initiated by us and fine tuned with other participating clients has been very rewarding. We believe that the system allows sheep producers to meet the well documented targets and management required for consistently high reproduction and low ewe and lamb wastage.

So where does genetics come in and how important is genetics to reach profitable, efficient and ethical animal production?

BREEDING AIMS / OBJECTIVES

A maternal sheep needs to be efficient. Efficiency in a sheep system means maximising productivity but minimising wastage and expense. Some compromises are needed to achieve this balance. For us we needed to focus on our goals and breeding an animal that had greater relevance to our shorter growing season. This involves selecting traits not only to improve carry over reproduction in failed springs but also for the ability to produce lambs with more fat and muscle which we believe assists us in achieving the pointy end of lamb survival and profitability.

Stocking rate and reproduction are inter-related as additional reproduction enables you to enjoy the cheapest and most efficient gains in stocking rate. This in turns enables you to increase feed utilisation and ultimately production/profit per ha.

As avid sponges for aspiring to improve all things in sheep farming, we focused strongly on growth and reproduction from 1993 to 2008. Some serious seasonal impacts on our growing season length from 2002 to 2007 and the development of our own stud flock in 2006 made us re think some of our original aims in our breeding. We wanted animals that were more suitable and resilient to a variable climate and a ewe that was smaller than the version we had created up until 2008. Our ewe flock was big, lean and fertile. We were weaning more lambs than most and our lambs grew quickly but this also had some issues. Our standard reference weight (SRW) although not independently assessed at the time but as I was a keen weigher and condition scorer of stock, I was quite confident that we exceeded 70kg average ewe weight at condition score 3.

Fast forward to 2015, we had drastically shifted our focus to early maturing animals with more fat and muscle of their older sisters. The MLA Maternals project had our SRW of our ewes at 59kg and we enjoyed how quickly these animals developed. A low adult weight and an increase in fat and muscle has been a keen focus of ours since 2008. Since then, we have gained confidence in our management of lactation and subsequent lamb survival. Improving the genetics of our sheep has played an important role in building this confidence and increasing production gain. As we know good conception is vital in striving for high reproduction, however it does not necessarily allow you to reap the rewards of a high weaning percentage. Producing large litters of lambs without the ability for the ewe to rear them is irresponsible and goes against modern consumer and industry expectations.

Low lamb survival creates wastage not just in the lambs but also in the ewes that are trying to rear lambs. Managing nutrition in late pregnancy for ewes carrying more than 2 lambs is not easy. The management of the lambing environment with lower birth weights and a greater propensity for mismothering requires a greater level of husbandry, supervision and overall effort.

We have recently enjoyed the rapid increase in red meat/protein prices not only from our premium lamb but we have also enjoyed the linear returns from mutton prices. Ewe wastage takes the form of a number of factors in a sheep enterprise starting with dry ewes at scanning and also from pregnant ewes that fail to rear. The other major component of ewe wastage comes from ewe mortality. More than ever our production system in sheep must take into consideration consumer expectations in animal welfare. Profitability and efficient farm management are vital and especially when the meat boom and or seasons become less favourable than recent years.

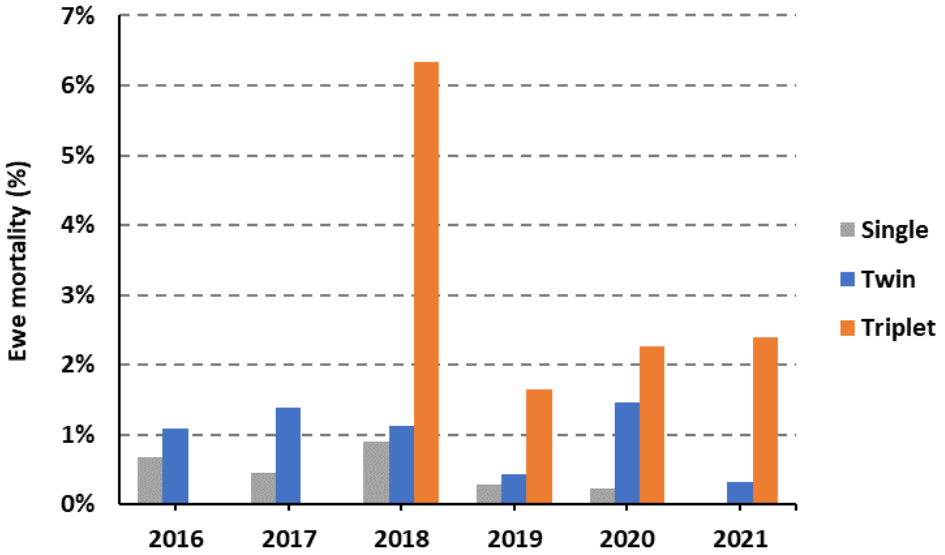


Figure 1. Mortality rates (from 2016 to 2021) for ewes bearing single, twin and triplet lambs at Cobbity, Coojar, Victoria

Accepting low lamb survival and high ewe wastage in the above-mentioned scenarios makes little sense. We have deliberately focused our breeding objectives to reduce wastage and also to compliment our sheep management disciplines. Combined, we have been able to reduce lamb and ewe wastage on a consistent basis no matter what the season delivers. ***90% lamb survival in twins is something that we consistently achieve and also keeping ewe mortality in all lambing ewes under 1.5%*** (see Figure 1). As mentioned we do farm our animals on well above industry stocking rates for our environment and at the same time manage one of the highest DSE/FTE ratios within the Livestock Farm Monitor benchmarking. Our business has achieved an average of 9.6% return on assets (ROA) in the past 5 years (see Figure 2).

So where do we head in the future for our best gains? Is there much more room in single and twin lamb survival? Maybe not but there is much to gain we feel in lamb survival and management of ewe lambs and also in best managing triplet bearing ewes and the wastage in these also. This is our current and main challenge we set to improve in years to come.

In 2020 and 2021 we have achieved an average weaning of over 1.5 lambs per pregnant ewe which includes our biggest age group being ewe lambs. Our rising 2 year old ewes for the past 2 years have scanned over 180% and weaned in excess of 162% to ewes joined. The most exciting results recently has been our overall dry rate at scanning in these rising 2 year old's. We have maintained a dry ewe rate of less than half of one percent (0.5%) in the last 3 years. All of these ewes conceived lambs as ewe lambs in the previous year. Ewe lambs that fail to get in lamb are sold to processors for slaughter. The big emphasis has been to replace condition on fertile ewe lambs post weaning and they are treated as the highest nutritional priority of stock on farm in spring and early summer. Our average dry rate at scanning within our commercial flock of 6500 ewes was less than 1% (except ewe lambs) in the current season at 0.9%.

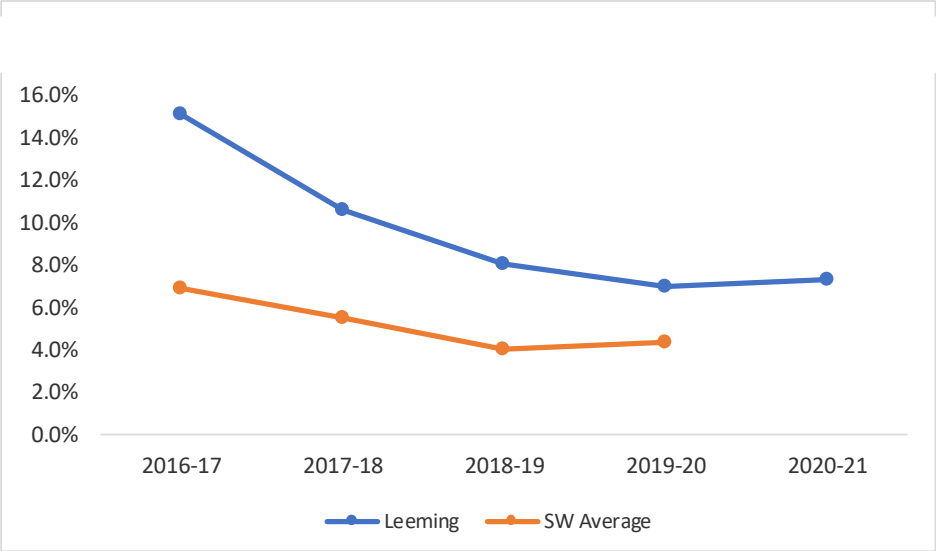


Figure 2. Return on assets (% - excluding capital appreciation) for our farm (Leeming) compared with the South West (SW) Average from the Livestock Farm Monitor Project

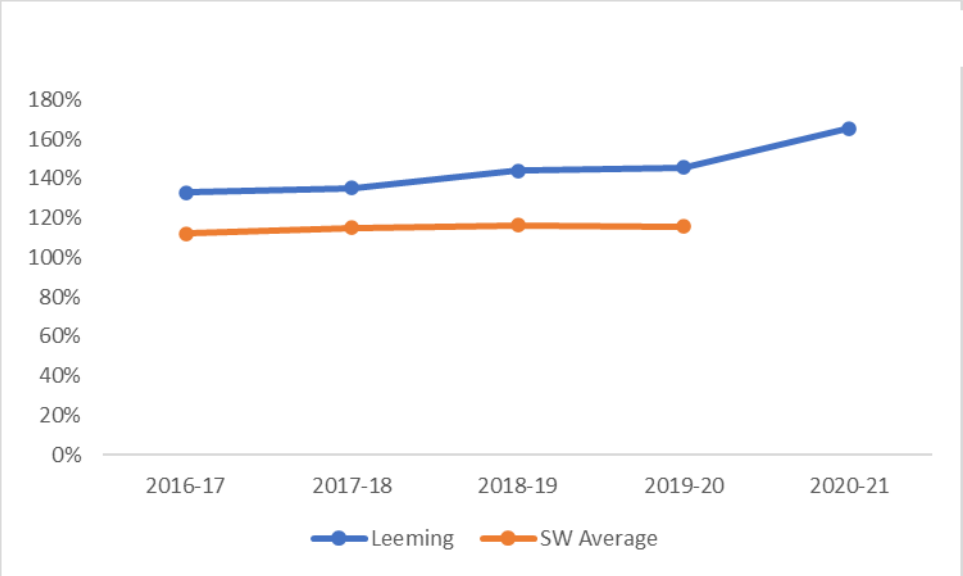
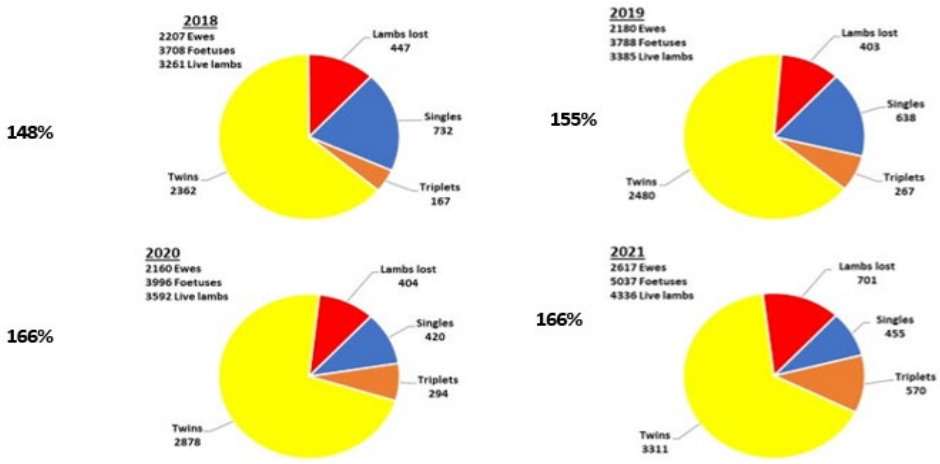


Figure 3. Lamb marking % for our farm (Leeming) compared with the South West (SW) Average of prime lamb farms in the Livestock Farm Monitor Project

Our commercial enterprise is our sounding board for our breeding direction. It is 100% transparent to industry and we pride ourselves on creating new targets within this flock and sharing our strategies in being able to achieve them. Setting disciplines in this flock to continuously improve stimulates us as a business. and the broader prime lamb industry.

Participating in projects such as the Maternals Project (2014-2015), Unlocking the keys to Ewe Survival Project (2019-2020) and various other research involving ewe lambs and triplets bearing ewes has been a rewarding experience and deliberate focus for us.



Has genetics helped us in achieving our production outcomes?

PROGRESS

Our use in genetics has been quite significant over 25 years as has the sheep management practices along the way. Changing the animals has been really interesting to watch from the initial days of building fertility and growth to more recently reducing adult weights and reducing ewe and lamb wastage.

Early maturity patterns and lower SRW weights helps us achieve our production goals as we have really focused our business as a specialist breeding enterprise. A sheep that is low maintenance, fertile, has fantastic rearing ability and can wean her body weight in lamb in 100 days is what we know we can do.

TAKE HOME MESSAGE(S)

What we have done since starting our stud business in 2006 has been to focus our attention on individual traits to make possible our breeding aims. We have been careful to chase the extremes or high indexing animals for much of the past 15 years. There has been many high index animals in the past that have not suited our aims and quite often do not always best fit our environment. Growth should be rewarded or encouraged but quite often in the extremes it has too much to compromise. We have modified our approach and have always aimed at a balance. Our strongly pragmatic approach has been to keep a clear path in our breeding, underpinned by strong fundamentals around structural/physical selection. Genetics in maternals has a compound effect so keeping the balance is paramount. Moderation it maybe, but always heading in what we believe is the right direction for us and the recipients of our genetics.