EWE LAMB JOINING FOR SELECTION

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INTRODUCTION

We run a Border Leicester stud in South Australia and I believe that our breeding program needs to focus on the requirements of the leading prime lamb producers that are breeding from 1st cross ewes (Border Leicester x Merino ewes). It is therefore important to listen to these prime lamb producers both directly and indirectly. When I write that I listen indirectly I try to listen for what they are not telling me as sometimes you just hear about problems and never hear about solutions. Listening is very important and so is not being frightened to try to find out what is possible and what is not.

BREEDING AIMS / OBJECTIVES

To earn their place in the industry, 1st cross ewes must:
1. Have a lot of twins
2. Rear the lambs they produce
3. Produce lambs that grow fast
4. Produce fibre that more than covers the shearing cost
5. Have resilience
6. Produce lambs that have a very good carcase

This is my basic 6 pack of traits that is expected from a 1st cross ewe. However, I know there are prime lamb producers that are pushing boundaries and looking for more from their ewes. In particular they want to get a financial return earlier by joining these 1st cross ewes earlier, as ewe lambs. My focus in our flock's breeding objectives revolves around breeding sheep to match industry expectations.

PROGRESS

We have been able to achieve above average gains in most traits within our flock that is recorded and benchmarked with Sheep Genetics. One of the key ways we are achieving our breeding objectives is by using large numbers of ram lambs in our flock. This is quite simple and puts a natural selection pressure on selecting rams that have clearly demonstrated their early growth. This is backed up with good performance data to make good selections from the ram lambs. The more high-quality historical data the better. The more high-quality current data the better.

When it comes to mating ewe lambs it is quite different because we are bringing reproduction into the equation as well. However, it is still about enhancing natural selection and having very good data. There are several factors that influence the result from ewe lambs that I still don't understand. Weight is seen as a major success factor in getting ewe lambs pregnant. I have seen publications that recommend that the ewe lamb needs to be a minimum of 40 kg another that recommends 42 kg and another that says 45 kg. Figure 1 is a plot for ewe lambs at Inverbrackie for liveweight and condition score at the start of joining in 2020, their pregnancy rates and litter size.
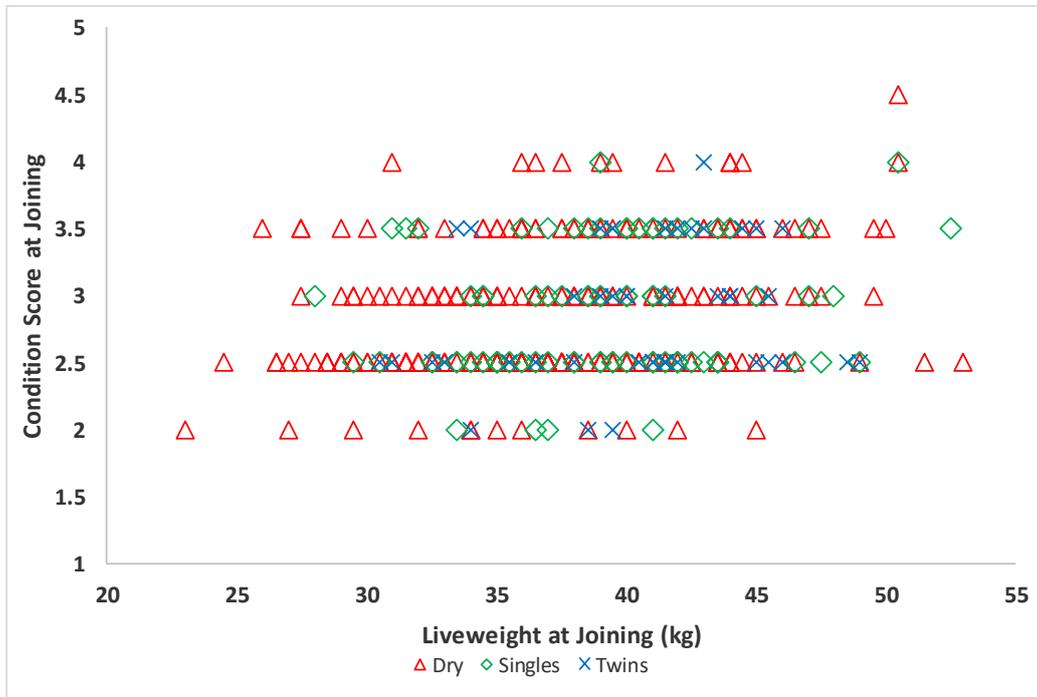
Figure 1. Plot of condition score against liveweight at joining and resulting litter size for ewe lambs mated in 2020

As a performance recording seedstock producer I understand how important it is to maintain large numbers of animals in management groups. I also understand how important it is to look for the outliers as these are the animals that have the biggest potential to make change within a breeding program. I give all ewe lambs a chance to join regardless of weight. We have ewe lambs lighter than 36 kg getting pregnant and we have ewe lambs over 50 kg that don't.

We are joining at 7 months of age because of the seasonal weather pattern for our area which is means that early sexual maturity is another issue. Age at joining / sexual maturity is more important for a successful ewe lamb joining and this where we believe we are having a genetic effect. The lightest pregnant ewe lamb was born to a ewe lamb, born a triplet/raised as a twin and conceived at 26 kg. With a higher joining weight in 2019 there was not a significant change in pregnancy rate as shown in the graph below (see Table 1 and Figure 2). Note: 2018 drop lambing in 2019, 2020 drop lambing in 2021.

Some years we have had only 10% pregnant. Some years we have 55% pregnant. In the years where we have low pregnancy rates many people would say why bother. But think about the selection pressure that has occurred in the years with poor results. The progeny from those ewes are really special. 90% of the ewes did not give me anything to work with in a lowly heritable trait. Because it is lowly heritable, I cannot expect every one of those lambs to help us to make direct genetic gain but they have provided data in our flock that will help us to make gradual improvement.

Table 1. Average weight and condition score at joining and pregnancy status of ewe lambs joined in 2019 and 2021

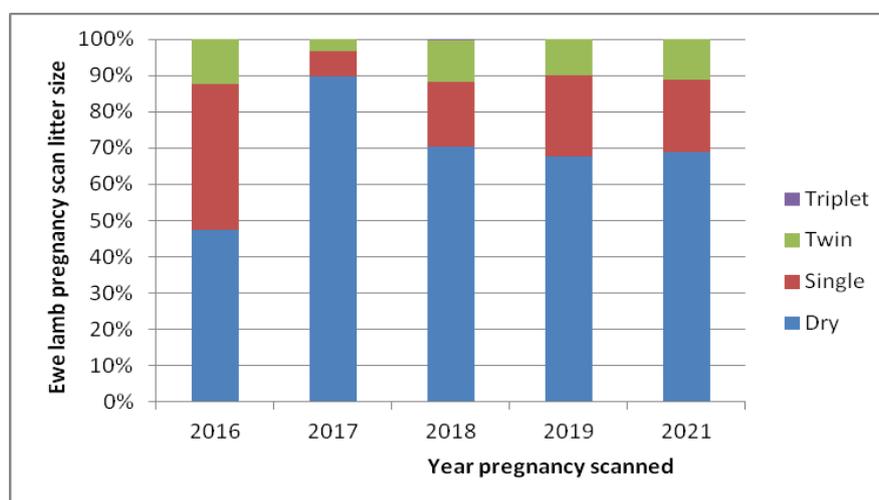| Year of Birth / Litter Size	Average Weight at Joining (kg)	Average Condition Score at Joining	Number	Proportion (%)	Pregnancy Rate (%)
2018					
Dry	43.5	3.2	268	67.5%	
Single	45.3	3.36	88	22.2%	32.5%
Twin	48.4	3.37	41	10.3%	
2020					
Dry	37.2	2.87	280	68.5%	
Single	38.9	2.88	83	20.3%	31.5%
Twin	40.5	2.87	46	11.2%	

Figure 2. Inverbrackie ewe lamb pregnancy scanning results

The progeny from the ewe lambs are seldom as big as the progeny from adult ewes. When I first starting mating ewe lambs we did nothing to make it simple to identify them and most were culled purely on size. Later I realised that was totally unfair as the same ewe was mated to the same ram a year later visually they would have produced an animal that would have been retained in the flock. So we began using a code in the eartag that tells us that it was bred from a ewe lamb. Since this system was put in place we are not only keeping a lot more of the ewe lamb progeny but most years we have selected ram lambs to use as sires. Think of the selection pressure that has occurred. We have used a ram lamb that came from a ewe that was capable of getting in lamb when others didn't and that ram lamb demonstrated his ability to have superior early growth. The selection is still backed with top performance data.

It is currently recommended to select for fat and muscle to assist in reproduction. When we look at the animals produced from ewe lambs and where they influenced the direction that our breeding program has taken, guess what has happened in our flock? We have found that we are now producing animals that have more fat, muscle and increased reproductive performance (see Figure 3). Not only that but we also have strong early growth. I give a lot of the credit for our

position in the industry to the selection has occurred from the use of young animals in our breeding program and in particular from the ewe lambs.
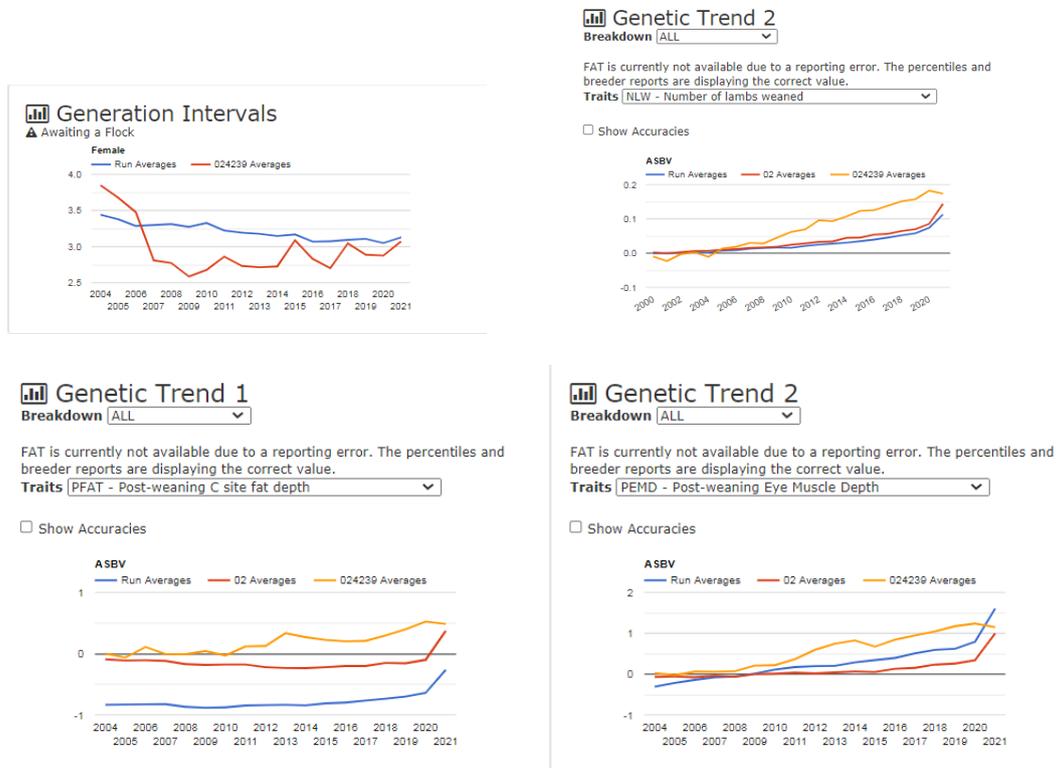

Figure 3. Generation interval and genetic trends for NLW, PFAT and PEMD for Inverbrackie

In 2010 we used our 1st ram from a ewe lamb (a 2008 drop) and subsequently used 3 of his sons in 2011 also from ewe lambs. I am a firm believer that it is a seedstock producer's job to create difference within a mob to aid selection and not to try to make everyone in the mob look similar. Selection is where our genetic gain comes from.

TAKE HOME MESSAGE(S)
1. Shortening genetic interval speeds up genetic gain.
2. Make your animals work for you so you can see what they are capable of and don't work for them to make them all look the same.
3. Don't intervene by giving some animals different management because otherwise it will bias the estimate of genetic merit and ultimately reduce genetic gain.
4. Keep good individual production records – don't be frightened to include the individuals with poor production records.

ACKNOWLEDGEMENTS
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