

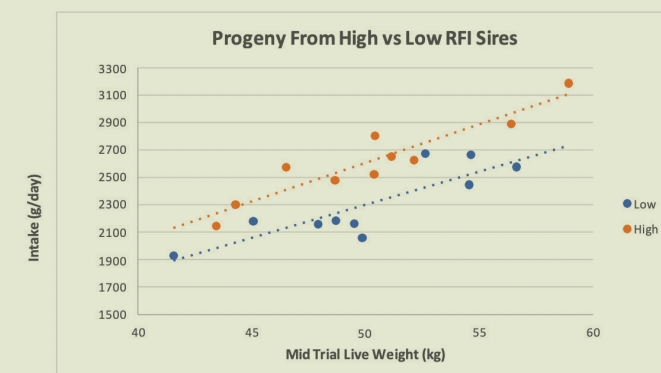
GHG emissions work in New Zealand

There is increasing interest in methane emissions from sheep, given the interest by consumers in sustainable food production, particularly carbon emissions. MLA's Carbon Neutral 2030 goal is an indication of how seriously industry is taking this trend. There is a lot of work going on over the ditch, with the New Zealand government committing to a 50% reduction by 2050 (and agriculture is part of this). Our NZ Coopworth colleagues shared with us a report on the B+LNZ Genetics Low Input Progeny Test (a three-year programme led by Beef + Lamb New Zealand (B+LNZ)), which some of them are participating in. Low input farming aims to reduce the use of external inputs by identifying sheep that require minimal intervention, are robust to combat specific diseases and have reduced methane outputs through feed efficiency. Traits being examined include animal welfare traits (e.g. tail length, dagginess, bareness of wool); disease resistance (parasites, pneumonia); environmentally efficient (methane and feed efficient).

We have summarised the methane and feed efficiency work here, but if you want to review the whole report click on the following link: https://www.blngenetics.com/files/1592997888_Low%20Input%20report-PublicReport%202019%20v06Formatted.pdf

This article builds on the piece about feed use efficiency in our 2020 Palmerston Coopworth newsletter, which covers research being done in Australia at Murdoch Uni.

Residual feed intake (RFI) is a measure of feed efficiency. Having a feed efficient animal is cost effective and considered to be an important sustainability trait. In the NZ work, individual residual feed intake values of sheep from different sires were used to estimate sire variation in RFI. RFI has been found to be moderately heritable (0.47). Although progress is slow (around 1% per year with single trait selection), it is cumulative and to date, no detrimental associations with production or health traits have been found.



Plot demonstrating the variation in intake for given live weights for progeny from sires identified as high residual feed intake (eating more than expected) and low residual feed intake (eating less than expected).

The trial also measured methane emissions from individual animals. New Zealand breeders now have access to breeding values for methane (PACCH4).

Palmerston breeding program

New sires

This year we purchased two new rams from Victoria which will give us good linkage to other Coopworth and maternal studs. I specifically wanted Coopworth type with black nose and black feet and also wanted pedigree relating back to Twin Farm 070807. One of the two rams, Cloven Hill 200219 has MCP+ Index of 167.2 and his sire 170188 has a huge MCP+ Index of 193.3 and has been used in 16 studs, with 1973 progeny to date. Both new rams have progeny on the ground this year. Details for our 2021 sires can be found on our website.

Breeding objectives

Our breeding objectives remain basically the same, so we encompass the MCP+ Index (Maternal Carcass Production + Wool and Wec) we like to see plenty of fertility, good growth to 8 months and then plateau out to moderate adult weight which is easier said than done, I might add! We also like to see good black feet as these tend to be more tolerant of foot problems in higher rainfall areas.

Even though wool prices are terrible and there is a shortage of shearers we still have to stick to our breeding objectives and retain wool because we want to keep our sheep as true dual purpose, maternal sheep.

Skin thickness

I remember on one of our trips to New Zealand when we were south of Dunedin in some country that was prone to rough weather, a group of breeders were talking about lamb survival and the term "thick ears means thick skin" was mentioned.

More recently I noticed a NZ Romney breeder had been working with Massey University measuring skin thickness of lambs and relating this to lamb survival. They found that by measuring skin thickness using a specialised ultra-sound, lambs' skin ranged from 1mm to 3mm and under controlled test conditions the thinner skinned lambs lost more body heat than thicker skinned animals. More study revealed a heritability of 0.26, similar to WWT at 0.32 and NLW at 0.30. It was also found that triplets were born with thinner skins.

The Romney breeder has been selecting for thicker skins in his breeding program and is now producing lambs with skin thickness up to 4.7mm. So in terms of animal welfare and productivity this research ticks all the boxes.

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NEWSLETTER SPRING 2021

WELCOME | 2021

Good rains in early 2021 led to an abundance of grass which we couldn't altogether utilise and a fair amount hayed off over autumn. A dry autumn/early winter meant pasture quality was far from ideal and there was a large corby infestation from within the standing dry grass.

Due to a combination of feed and other reasons, Palmerston ewes were averaging condition score 2.5 which wasn't ideal when Leanne and I returned from the mainland in mid-July.

Stud lambing saw more dead lambs than in other years, lambing under centre pivots up under the mountain doesn't help as there isn't any cover. Sheep that lambed on the edge of the bush fared better. Sheep in lighter condition tend to move about more looking for cover and feed during periods of bad weather and this tends to lead to more mis-mothering. Some of our paddock selectins for this years' lambing were not ideal in terms of paddock topography and layout but we were limited by feed on offer. Next year we will need to do better with grazing management during autumn and winter and target specific lambing paddocks and lock them up earlier. We suspect we may also have had issues with campylobacter.

Now that I have entered lambing data, the higher lamb mortality has affected NLW figures of most of the sires used this year. Sheep Genetics have looked into this problem and referred it to Australian Genetics and Breeding Unit (AGBU) who concede that environmental factors do play an important part in lambing results however they aren't included in the calculation of ASBVs. It's not so much the sires that had the problem but daughters of sires. One particular sire only had four daughters that lambed and two of those lost lambs so effectively half his daughters didn't raise a lamb which doesn't look good in the system.

In saying all that, there are still lots of lambs on the ground and the old saying about the survival of the fittest means that lambs that do well this season are certainly well adapted to being subjected to harsh conditions.

On that note, when sorting yearling rams prior to shearing in September, one particular ram stood out as having handled the winter well, he wasn't fat, he just had good shape and condition. On investigating his figures he had good high average numbers although nothing extraordinary. He stood out again when we were sorting rams for sale. 'Doing ability' is not easily measured but in a harsh environment sheep like that are important. At the time of writing, he's listed in the sale but if you see a gap in the catalogue then I've decided to keep him and give him a few stud ewes.

Value-adding with dual purpose crops

This year was the first time we have experimented with growing Canola, with a dual-purpose crop being sown at Creekton during Autumn. The grazing through winter proved to be quite valuable with the tops of our remaining kill lambs putting on up to 350g/day during July. The crop is now in full flower and hoping for a good yield as canola prices hit record highs at \$800/T. Unfortunately like many others, we locked in at a lower price!



This year's lambing saw a couple of new tools tried out – CanAm (quiet, comfortable, and smooth), and the rubber dairy farmer suit kept Bill dry, snug and clean(ish).

Ewe survival project update

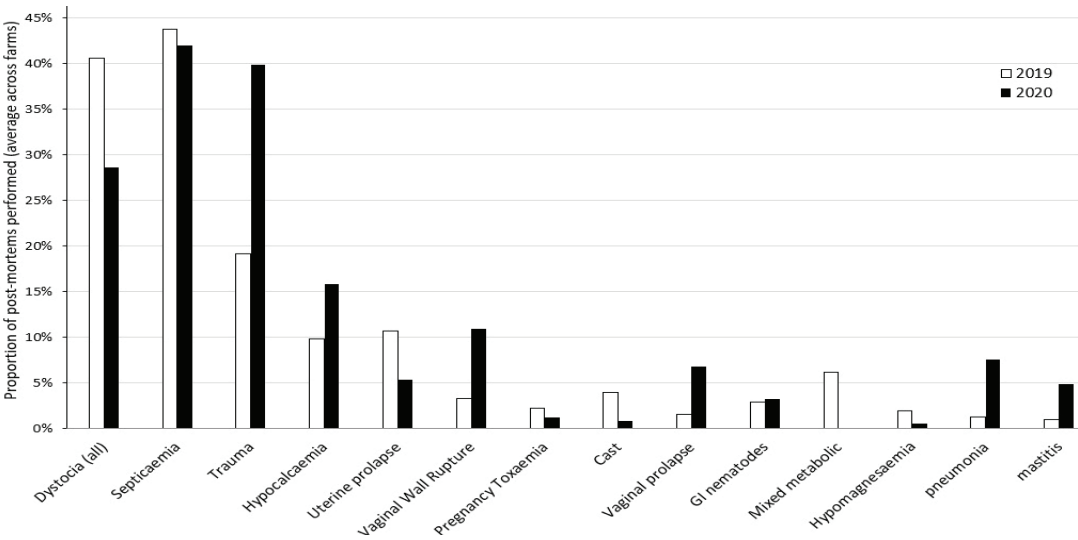
Leanne has been part of a project team working on ewe survival over the previous two lambing seasons. The project has just wrapped up and has produced some interesting results. The team has been led by Livestock Logic, with University of Melbourne (MacKinnon project) and Murdoch University, and funded by MLA.

The project worked with 40 commercial non-Merino producers across Victoria, NSW and WA during the 2019 and 2020 lambing seasons. Ewe deaths during lambing were recorded by producers at each farm, along with cause of death (where known). On 18% of dead ewes post-mortems were conducted by the project vets, with detailed cause of death determined.

Mean ewe mortality across all farms was 2% in 2020 and 2.5% in 2019. The highest average mortality was 5.9% while the lowest was 1.3%. This data has resulted in these benchmarks for ewe mortality.

< 1%	Industry best target
1 to 2%	Good job
2.1 to 4%	Improvement needed
>4%	Action a priority – explore the issues and address

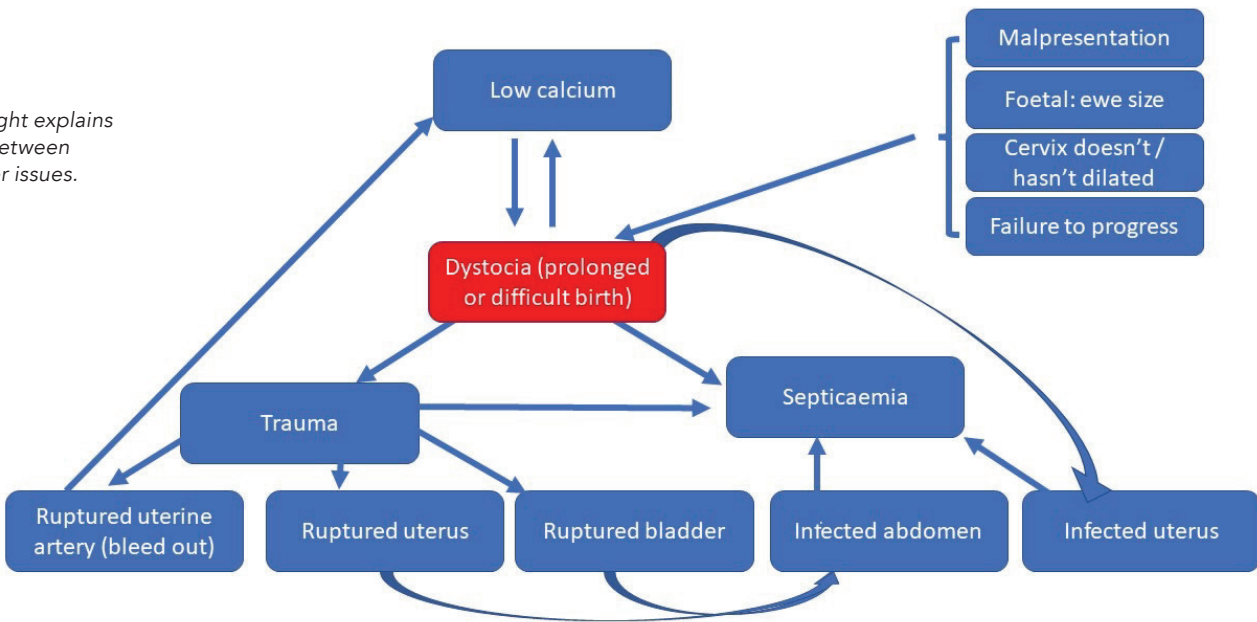
The most commonly diagnosed causes of death were (in order of importance) septicaemia (blood poisoning), dystocia, trauma and hypocalcaemia. Other commonly diagnosed causes of death included dorsal vaginal wall rupture, uterine and vaginal prolapse and gastrointestinal worm burdens. Only about 60% of dystocia cases were 'obvious'; the other 40% required PM to diagnose. This means dystocia is likely to be one of biggest killers of lambing ewes even though producers may not be seeing this themselves.



Average proportion of ewes submitted for vet PM with each diagnosis, across farms. Multiple diagnoses were possible for each ewe. Unknown & 'other' are additional results.

There were strong interactions between dystocia, septicaemia, trauma and hypocalcaemia, likely due to complications from dystocia (e.g. blood poisoning, trauma etc). The post-mortems revealed the hidden damage associated with dystocia - extensive trauma to the reproductive tract.

The diagram to right explains the relationship between dystocia and other issues.



Risk factors

Increased risk of dystocia:

- in single-bearing ewes (compared to twin-bearing) x1.3
- when ewes were better fed (on crop compared to pasture 1.7x more likely to die from dystocia)
- in higher condition score (3 compared to 2.5 (at post-mortem))

Risk of hypocalcaemia was increased in older or skinnier ewes. 5 year old ewes had a 2.4 higher chance of dying from hypocalcaemia compared to 3 year old ewes. Ewes in BCS 2 or less at death had 1.9x higher risk of hypocalcaemia at diagnosis compared to those in BCS 3.

Dorsal vaginal wall rupture was a higher risk in fat multiple bearing ewes with large lambs. Ewes with a condition score equal to or higher than 3.5 were over 2.5x more likely to be diagnosed with DVWR. High total foetal weight (>10kg versus 5-10 kg) also put ewes at higher risk. It was a lower risk in singles compared to multiple bearing ewes.

Management implications

The results from the project support the existing industry best practice management guidelines for ewes during pregnancy and at lambing, and reinforce the importance of the following:

- Pregnancy scanning and differential management of twin and single (and triplet) bearing ewes
- Meeting condition score targets, and minimising the variation in condition scores of ewes (i.e. average condition score of 3 with a range from 2 to 4, is problematic compared to the same average with a range of 2.8 to 3.2). Target CS at lambing: singles 2.8-3.0, multiples 3.0-3.3

Additional recommendations to add to the current industry best practice management guidelines include:

- Separate older ewes (>5 years) into their age classes for lambing.
- Ram selection – avoid outliers in the ram team for birthweight, focus on birthweight for ewe maidens (BWT) and lambing ease ASBVs (LE DIR, LE DTR).
- Consider calcium supplementation (particularly for older ewes) and on low calcium feeds.

Monitoring and intervention

- Check ewes regularly during lambing: especially high risk groups (e.g. older ewes) ensure ewes are familiar with vehicles before lambing starts.
- Do not use the same vehicle to check lambs as you would to feed out
- Stage 2 labour should take 40-60 min: don't allow a ewe to labour for too long
- Use gloves, lube and minimal force when assisting
- Correct position where possible before delivering malpresented lambs
- If labor is extended, or lambs are dead or rotten consider antibiotics, non-steroidal anti-inflammatories (NSAIDs) such as Meloxicam and 4 in 1.

Further information

Further information about the project will be available from the MLA website in November and via MLA webinars, or on the project team's websites.



This year's lambing we took on-board the results from this work, and carried antibiotics in the lambing vehicles. All ewes that were assisted in any major way were given a shot of antibiotics. Given we often use assisted ewes with dead lambs as foster mothers for orphaned lambs, we were able to observe the positive impact of doing this. We had no foster mothers dying this year, whereas it is not usually uncommon.

