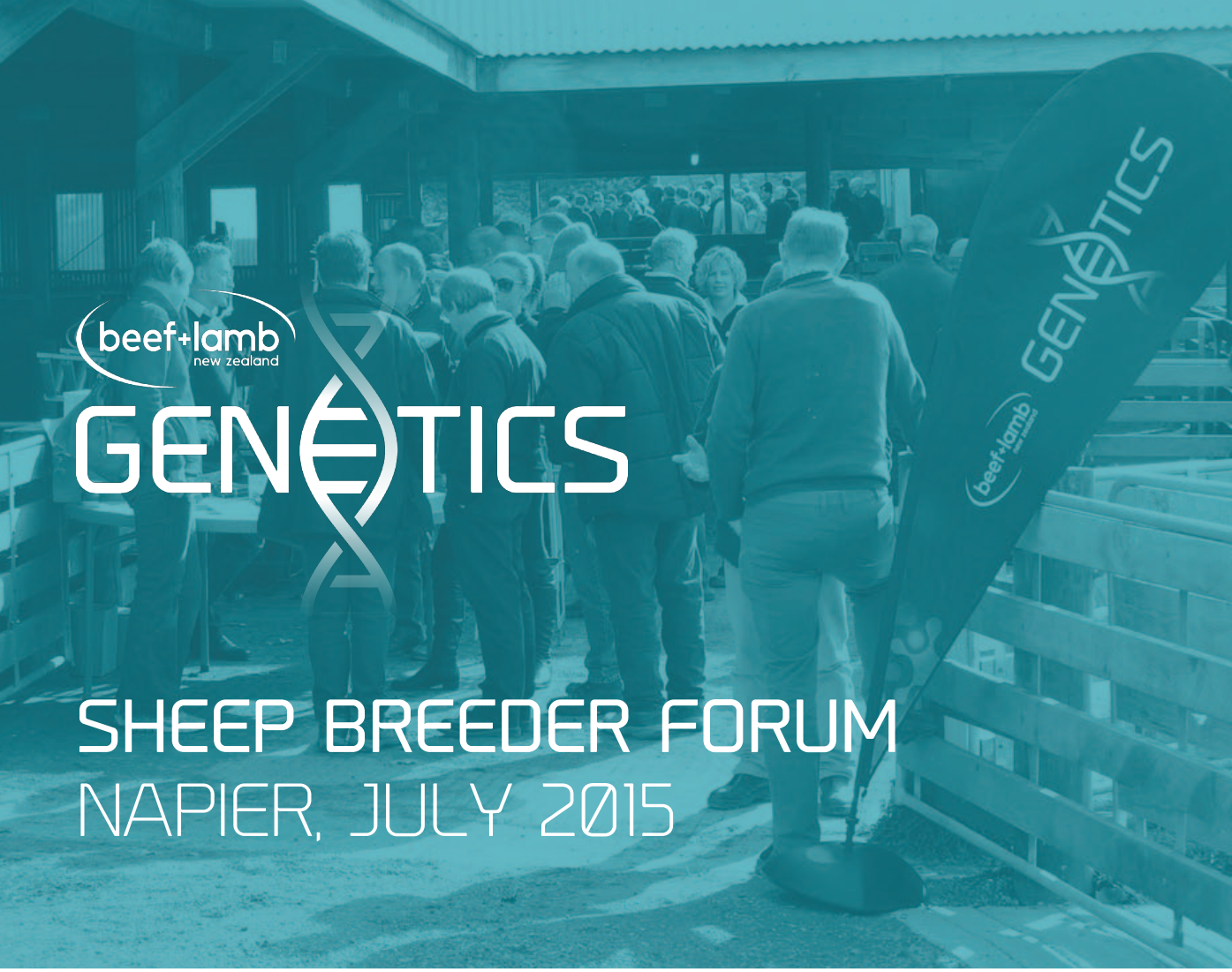


SHEEP BREEDER FORUM
NAPIER, JULY 2015

About 100 breeders attended this year's Beef + Lamb New Zealand (B+LNZ) Genetics sheep breeder forum in Napier.

This post-conference newsletter summarises many of the presentations covered over the two days (23-24 July). Most presentations were also videoed and can be viewed on the B+LNZ Genetics website's news page

www.blnzgenetics.com/news

At this link, you will also find a pdf of the forum booklet, which contains posters outlining B+LNZ Genetics-related research.

INSIDE:

Key achievements of the past year

The Genetic Cornerstones

In B+LNZ Genetics general manager Graham Alder's overview of the past 12 months, he highlighted the development of the "Genetic Cornerstones" – a communications framework for helping simplify the steps to achieving the gain a particular farmer or farm operation seeks. This reflects that, while genetics can be complex and sometimes even seemingly impenetrable at a scientific level, the fundamentals needn't be.

"We are encouraging breeders and commercial farmers to consider genetic gain in the context of four straightforward steps or cornerstones." Graham said. "Sitting beneath each cornerstone is a range of B+LNZ Genetics programmes. But, from a farmer's perspective, their primary point is to help maximise focus on the steps that are important for them, versus being bamboozled by the array of projects that underlie them. Hopefully this will help individuals focus on the initiatives that most help them make more profitable breeding choices for their operations."

The four Genetic Cornerstones are:

Focus on heritable performance
Non-genetic factors have a bad habit of skewing decision-making away from the most important factor in ram or bull selection – the potential of offspring. When estimating genetic potential, commercial farmers need to see past non-genetic effects as much as possible – hence the importance of estimated breeding values.

Work with a breeder who uses SIL or Breedplan
Genetic engines used by SIL and Breedplan remove considerable bias in estimating genetic merit. Bias is also reduced by good genetic connections between flocks, built by using link sires. This cornerstone aims to highlight the importance of using SIL and Breedplan breeders.

Align breeding values to your farm management and goals
B+LNZ Genetics wants to help make it easier for commercial farmers to match their farm goals with directly comparable breeding values, such as carcase weight by a certain date; lambing percentage; lamb survival.

Achieve and monitor ongoing genetic gain
This cornerstone encourages commercial farmers to measure their own flock's progress. The idea is to ensure their future ram or bull purchases continue to advance the gain they want.

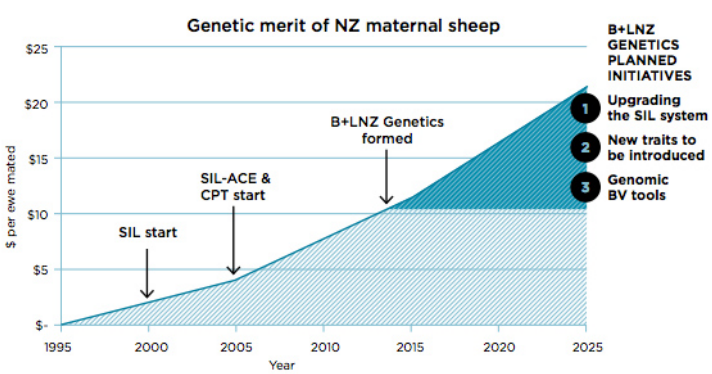
B+LNZ Genetics' inaugural senior lecturer in quantitative genetics

Dr Phillip Wilcox has been appointed B+LNZ Genetics' inaugural senior lecturer in quantitative genetics. Phillip has a background in molecular and quantitative genetics and comes from the forestry-focused Crown Research Institute, Scion.

Based at the University of Otago, Phillip's main focus in the B+LNZ Genetics -funded role will be to establish a two-year Master of Applied Sciences in Quantitative Genetics. Quantitative genetics is central to most of B+LNZ Genetics research activities and underpins SIL.

Genetics deliver dollars

Graham presented this graph, to highlight the impact of SIL-ACE and the CPT. B+LNZ Genetics plans to continue driving genetic merit through initiatives outlined on the right of the graph.



B+LNZ Genetics Central Progeny Test

Dr Brian Wickham, a Kiwi and former chief executive of the Irish Cattle Breeding Federation, has recently completed a review of the Central Progeny Test.

Recommendations include tweaking the test's focus to increase its contribution to industry communications and R&D. The option of setting up "Next Generation Flocks" to increase the national sheep flock's genetic merit and to demonstrate the best genetics for commercial farmers has also been put forward for consideration.

Careful thought needed around ewe condition and fatness levels

The high correlation between a ewe's condition score and her fatness levels as a young animal mean some careful thinking is required around genetic selection in this area, says Australian geneticist Dr Dan Brown.

Dan is principal scientist at the Animal Genetics & Breeding Unit based in Armidale, Australia. The unit developed and supports the equivalent of New Zealand's SIL sheep genetics service. He has been with the unit for 16 years and is also involved in genetics-related research and development for Australia's red meat sector. He is also a sheep farmer, himself.

At the forum, Dan outlined the issues which are front of mind in Australia's sheep genetics space right now – and many are similar to the issues facing New Zealand. One hot topic is ewe condition score, fatness and mature weight.

"Ewe condition score is highly correlated between different time points within and across years and also highly correlated with young animal fatness. Our ultra-sound scanning on young animals is highly genetically correlated to ewe condition score. This has important implications. If we are going to change ewe fatness, we are also going to change the fatness of our slaughter animals – and vice versa – unless we manage that. Dan said more work was required on the implications of fatness – to value it through the whole production chain and make sure it is accounted for properly in breeding objectives."

Other key issues in Australia include a focus on producing more reliable reproduction breeding values.

"A key aspect is better data from breeders. We also want to break up our analysis, so we deal with the individual components of reproduction better. Currently, we just analyse net reproduction rate, which is number of lambs weaned per ewe joined, but in fact that is a function of three key traits – fertility, litter size and survival."

This development will allow breeders the option of recording some information, but not necessarily all. It will also allow more accurate BVs to be produced.

Dan believes there is also a significant opportunity in improving the quality of data coming into the Australian system.

"I think this is where the biggest opportunity lies for us in the short term. There is huge variation across our breeds and our data sets for data quality."

He also sees obvious potential in more collaboration between Australia and New Zealand for more efficient R&D spend and in large-scale, across-country evaluations that would produce more accurate BVs. "The current exchange of data could be extended to take a great step forward."

NB: B+LNZ Genetics is working on the issue of fatness in lambs and body condition scores in ewes. It is about to release a breeding value for ewe body condition score, to help progress this work.

Dan Brown, principal scientist at the Animal Genetics & Breeding Unit based at Armidale, Australia outlined current issues and opportunities in the Australian sheep-breeding scene.

Taking a fresh look at genetics

Hawke's Bay farmer and ram breeder Colin Campbell, together with wife Jo, hosted the forum's second day of activities on their property. Colin began farming relatively late in his career and values the fact that he needed to ask a lot of questions. The operation includes Romney and Poll Dorset studs and Colin is strongly led by SIL-ACE indicators.

He also works closely with stock manager Peter Tod to also ensure "type" is never compromised. Colin finds the approach works well and the top animals tend to be the top under the microscopic lens of both SIL-ACE and Peter's eye. As an aside, Colin's stud stock are EID tagged and he finds that is a great time saver.

If you want to hear what Colin had to say, his full presentation can be watched by going to the "News" page of the B+LNZ Genetics website **www.blnzgenetics.com** Colin is also a case study farmer profiled to illustrate one of the four genetic cornerstones. This story can also be found on the website, on the "Cornerstones" page.

Ram breeders welcome body condition scoring breeding value

A breeding value for ewe body condition score will be available to ram breeders by the end of this month.

SIL advisor Sharon McIntyre updated ram breeders on new breeding value traits currently in the pipeline, including one dedicated to body condition score in ewes.

Body condition scoring (BCS) is becoming an increasingly popular management tool, because of the positive effect it has on so many key outcomes. Studies show that a ewe's body condition directly affects scanning percentage, lamb birthweight and survival, mothering ability, colostrum production and milking ability, lamb growth rates and weaning weights.

Adding BCS will improve characterisation of genetic merit of maternal (dual purpose) sheep. Productivity is only half of the profit equation. Until now SIL has estimated feed costs for adult ewes on the basis of genetic merit for adult weight. Adding in BCS will improve this estimate of what a ewe will eat and so her cost to the system. Initially, BCS will not be in SIL indexes but once we know how it is related to other traits, it will be integrated into indexes for maternal sheep.

Over the past five years, about 50 SIL flocks have been submitting body condition score data – some as a by-product of their involvement in an Ovita project looking at ewe efficiency. This data has allowed SIL to develop this first version of a body condition score breeding value.

Sharon explained that the breeding value is being developed in direct response to breeder feedback that ewe weight alone does not fully describe all aspects of ewe size. "Adult size describes one, but not all, aspects of a ewe that impact on her feed requirements. Body condition scoring is a way of getting more information about adult size and performance. It's a quick, easy and low-cost tool."

While scores can be recorded at any of four key management times – mating, scanning, lambing and weaning – analysis shows there is a strong correlation between those scores. That means that a particular ewe with an above average condition score at one point of the year is likely to record an above average score at other times. The correlation is 79 to 95 per cent, which means breeders need only submit one condition score annually, ideally at mating time and ideally alongside the ewe's liveweight. However, some breeders are measuring this at weaning or tailing as well, to assess how BCS changes.

Analysis of existing data revealed that body condition scoring is moderately heritable – 16-20 per cent –which is positive from a breeding perspective.

The SIL recommendation is to score all two-tooth and older ewes once a year – preferably at mating, as the breeding value is body condition score at mating–and record liveweight at the same time.

Initially, the breeding value is referred to as research breeding value (rBV) and will not be part of SIL indexes or sub indexes.

Once the breeding value is available for use, Sharon is keen to hear from breeders about how they are using it, particularly as to whether they're using it as a standalone value or alongside others.

SIL is also interested in feedback on how the BCS rBV is helping identify good maternal lines of sheep.

Email silhelp@sil.co.nz with feedback on how you are using the BCS BV.

Adult ewe size: The forum's hot topic

The most hotly-debated topic at this year's forum was adult ewe size and its impact on Dual Purpose (maternal) sheep indexes.

At the root of the debate is the correlation between an animal's growth rate and its adult size: Fast-growing animals are far more likely to end up as large animals, due to a moderate-to-strong genetic correlation.

B+LNZ Genetics board member and ram breeder Leon Black introduced the discussion. "When you have a trait that is across the board for everybody and it seems to be out of kilter with what makes sense on the farm, as a breeder it's only fair and right that we ask the best minds to look at it. So, adult weight: have we got it right?"Leon stressed that the current weighting on the trait was leading his breeding operation in the right direction, but his concern was around its overall impact. AbacusBio's Dr Tim Byrne went through the assumptions and calculations used to inform the trait, before B+LNZ Genetics senior geneticist Dr Mark Young picked up the conversation.

"If we drop adult size, it has consequences for other traits. For instance, by taking ewe weight out, you are making lamb growth rate dominant. The questions are: do we optimise the system for those measuring ewe liveweight? Or for those not measuring ewe liveweight? Do we favour stock economics or desired gains?

"The key is that we need to make informed decisions around this."

Currently, 64 per cent of SIL flocks measure ewe liveweight. Some breeders are choosing to drop adult weight, so their faster growing sheep are not penalised by it. However, this impacts on other important traits, including number of lambs born, survival, wool and weaning weight, as the emphasis swings toward lamb growth. "By taking ewe weight out, you're making lamb growth traits dominate the index, which means you are less successful at changing non-growth traits."

The conversation carried on into the panel discussion the following day. The end point reached was that experts would take another look at the figures and see if a compromise could be reached – to lower the impact it had in SIL maternal indexes, so it would stay in the indexes breeders used to drive their breeding programme. It was strongly recommended that all Dual Purpose sheep breeding flocks collect adult ewe liveweight data to better characterise genetic merit for growth BVs.

In-field data capture

Within eight months, the first in-the-field data capture tools will be available to SIL users.

Andrew Cooke of Rezare Systems – the IT team behind the SIL database system – updated breeders on the SIL system upgrade. It's been 14 years since the system was introduced and the current major overhaul involves updating the "Genetic Engine" to give much faster analysis (supporting the move to weekly across-flock analyses) and modifying the database system to integrate genotype data and facilitate exchange of data with other systems (such as farm management tools and auction software) and making it easier for breeders to share data with other parties.

Andrew said that, while the system's developers could not predict breeders' needs 15 years from now, they do know that the new system's technology platform needs to be capable of handling those needs – whatever they may be – through flexibility and integration.

He also acknowledged that breeders who have moved to EID had not had an easy road. "We have not made it easy to date, but that will change – B+LNZ Genetics are developing tools to help."

Examples of tools include a new application for collecting lambing details using a smartphone or tablet, reviewing animal history and breeding values in the yards, and Wi-Fi or Bluetooth connectivity to scales and EID hardware, such as those manufactured by Gallagher and TruTest.

Update: SIL genetic evaluation system upgrade

The upgrade is designed to address three issues:

1. Remove variability in information presented to ram breeders and buyers
2. Increase accuracy of genetic information to drive faster genetic gain
3. Faster turnaround for large, all-of-SIL evaluations

The upgrade will happen in three phases:

1. Upgrade of the SIL genetic evaluation system, to increase the scale and speed of evaluations producing eBVs
2. Integrate SIL genotype databases
3. Replace SIL genetic engine core, to achieve single pass evaluations that produce genomic BVs

A single all-SIL genetic evaluation should be running weekly by February 2016. It will produce BVs with identical or better accuracies than current evaluations and remove the need for "on-demand" evaluations for SIL data subsets.

Ram buyer metrics simplified

Two new genetic indexes have been introduced to simplify ram buying: "NZ Standard Maternal Worth" and "NZ Standard Terminal Worth". Their introduction is designed to make ram buying information much clearer for commercial farmers.

Senior Geneticist for B+LNZ Genetics & SIL Dr Mark Young said the indexes were being introduced for maternal sheep and meat sheep to overcome the problem caused by too many different indexes being used across flocks.

"We've had feedback that some aspects of the SIL system need to be simplified to help buyer confidence and to produce consistency in how animals are rated. Our response is to develop these two new, high-level indexes."

Mark said SIL did not want to constrain breeders' ability to focus their breeding programme on their own breeding goals. "This way, breeders can still use indexes as they wish for their own purposes. However, these new indexes provide a common yardstick for the commercial farmer to judge animals by, when buying rams. Buyers can compare rams using these index figures that summarise an animal's overall merit, based on the same basket of traits and the same economic weightings."

The new indexes are available now.

NZ Standard Terminal Worth index Takes into account:

- Lamb Survival
- Lamb Growth
- Wool production
- Carcass Meat yield

NZ Standard Maternal Worth index Takes into account:

- Reproduction (number of lambs)
- Lamb Survival
- Lamb Growth and Adult size
- Wool production
- Carcass Meat yield

Too little fat?

There is a need to be cautious around selection for carcase fat and intra-muscular fat. That was the key message of Alliance Group general manager livestock Murray Behrent.

Murray described genetic improvement as a sleeping giant. "We've observed considerable improvements in meat yields over the past decade."

He highlighted the dramatic improvement in "over fats". In 1990, 15% of lambs were over fat. Today, that figure is only 1%.

However, Murray said it's important that we don't overshoot our drive for carcase leanness of carcases, as the balance is about right now. He said that, while what has been achieved is "amazing", we need to make sure we don't affect meat quality and taste by taking too much fat out.

Looking ahead, he wanted to see better alignment of SIL breeding values and objectives with the objectives of the meat payment system.

B+LNZ Genetics and Alliance Group have a project underway, developing next-generation breeding goals for carcase merit. This includes a new SIL meat module that can use meat measurements from any processor and deliver consistent meat-related eBVs.

Perendale breeders Will Gaskin (left) from Shannon and Philip and Audrey Brandon of Waitomo catch up during the field trip to Campbells' property.

Facial eczema: Expanding its geographical territory

Scientists are seeing the geographical areas affected by facial eczema expand and urge ram breeders to start introducing tolerance into their flocks, sooner rather than later.

AgResearch animal production scientist Dr Tricia Johnson and RamGuard testing service head Neville Amyes presented a workshop at the forum, concentrating on the role genetics and genomic technology could play in predicting which animals were likely to be more facial eczema tolerant.

"Tolerance to facial eczema in sheep is highly heritable and genetic improvement can be achieved using SIL breeding values," Tricia said. But it can take many years to breed animals that have a high tolerance for the spores and it's not cheap to do, because of the RamGuard testing involved.

Tricia said more advanced genomic technology will allow breeders to "leap frog" progress towards facial eczema tolerance, but there will still need to be ongoing testing to continue moving from that point.

"Start now for the future. Look at getting a little tolerance through your breeding programme now by buying facial eczema tolerant rams and get that through the maternal population of your flock."

But she said the effort needs to be ongoing. It's not a case of using rams one season – facial eczema needs to be added as a trait to the breeding programme and, ideally, it should be accompanied by RamGuard testing to verify that progress is being made.

In order to achieve accurate genomic predictions, at least 1500 RamGuard-tested animals per sheep breed need to be genotyped using SNP chip platforms. More than 3600 sires have now been genotyped, but because of the 1500 per breed requirement for accuracy, only Romney predictions are considered sufficiently accurate at present. Coopworth are well on their way, with 780 sires genotyped, and Perendale have made a solid start, at 360 sires. In the case of Perendales, breeders have initiated a programme to boost these numbers and are now RamGuard-testing over 300 per year.

Scientist Dr Tricia Johnson and RamGuard testing service head Neville Amyes say facial eczema is a trait more ram breeders should consider incorporating into their breeding programmes, as soon as possible.

"Cheap as chips" rams

AbacusBio consultant Jude Sise and Zoetis regional manager Sharl Liebergreen presented a workshop during the forum, looking at the value of rams.

Sharl described New Zealand's rams as "cheap as chips" and encouraged ram breeders to understand the value their rams could add for commercial farmers' businesses and also for New Zealand sheep farming as a whole. He talked about a ram's worth being the value it adds to the industry, as opposed to what farmers are paying for them, which is generally a lot less than the value the ram actually adds.

Sharl said progressive ram breeders were using technology to full advantage – making great genetic progress and producing top genetic merit rams. However, sadly, this generally did not translate to significantly higher ram prices.

Jude urged breeders to be very aware of their selection intensity – to choose from only the top 10 to 20 per cent of rams, not the top 50 per cent.

She said the value of the ram depends on how it is being used by the commercial sheep farmer. For instance, how many years it is used and over how many ewes it covers.

The forum was dominated by breeders who believe in, and make extensive use of, performance recording and genetic evaluation. There was, therefore, much discussion about how breeders could communicate to commercial farmers that higher genetic merit rams are worth considerably more than average merit rams. No one had a ready solution. Options included introducing a ram pricing system linked to rams' genetic merit, but there was overall acknowledgement that, ultimately, ram breeders are also competitors and competitive pricing is part of their business model.

Good management needed to realise genetic potential

Consultant vet Trevor Cook ran a workshop on body condition scoring as part of the forum. He stressed the important role of good management to realise the potential of genetics. He stressed the dominant influence management has on performance – for instance the effect of mating weight on pregnancy scanning. Trevor suggested ram breeders could provide a "package" that gave commercial farmers key pointers to help them optimise the genetics they were buying. In this way, breeders are increasing the benefit that their buyers can gain from their investment. A package might contain key dates relating to the feeding levels needed for a ewe, and prompts that condition score needs to be 3 or more at mating and lambing. "These are the major factors driving the production of a breeding ewe."

2016 Sheep Breeder Forum

We sincerely apologise for the systems failure which saw forum invites fail to reach many breeders. We have put changes in place to avoid a repeat of this.

So you are aware of the process for 2016:

1. You will receive a "place hold" in February 2016, advising exact dates and the South Island venue for the July 2016 forum.
2. Forum invites will follow, when the programme and other details are finalised.
3. The forum will be filled on a "first in, first served" basis.

For any questions in the meantime, please email **info@blnzgenetics.com** or **call 03 477 6632**

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