

5 May 2009

Peter Weston
Chief Executive
Australian Poll Dorset Association Inc.

Dear Peter

Thank-you for your email message of 17 November 2008. I will address your questions in roughly the order you posed them, after first summarizing key ideas from the following text.

In a nutshell

- SIL was established to provide a common evaluation language and robust evaluation methods for the NZ sheep industry
- It is flexible in what can be recorded. Pedigree only flocks can be accommodated
- SIL has a range of analysis modules for most economically important traits
- Reporting can be customized to a clients needs and desires
- SIL encourages flocks to participate in across-flock evaluations
- SIL can exchange data with Lambplan (Sheep Genetics)
- SIL is committed to promoting the use of breeding values, and indexes based on these, for genetic improvement rather than raw data
- Since the establishment of SIL there have been demonstrable increases in rates of genetic gain achieved by NZ sheep breeders

SIL establishment

SIL evolved from previous performance recording and genetic evaluation systems operating in New Zealand. It was set up by the NZ Meat Board and the NZ Wool Board in 1999 in order to have one system for genetic evaluation of sheep in New Zealand. Previously there were a number of competing schemes with no clarity around the relative merits of these schemes.

SIL was designed to be adaptable and to evolve to suit the needs of the sheep industry. It is modular in design, allowing components to be updated easily, and it makes use of the internet to facilitate access to the system from anywhere with a live internet connection.

Eight bureaux retail the performance recording and genetic evaluation service to sheep breeders. SIL effectively wholesales the service. This means SIL has just 8 clients for its recording and evaluation service. These bureaux specialize in data handling and processing to suit the requirements of their breeder clients. SIL has a very flexible reporting system.

SIL has a significant role in industry good extension. This has a goal of increasing industry understanding of genetic technologies in a farm business context. SIL advisers man a help line (Tel 0800-silhelp or email silhelp@sheepimprovement.co.nz) as one thread in this extension programme.



SIL evaluations

SIL genetic evaluations are state-of-the-art analyses based on individual animal model BLUP methods. These are on demand for many users but large across-flock groups schedule their analyses at specific times.

SIL is, to our best knowledge, easily the largest genetic database for sheep in the world with data for almost 10 million animals. Currently there are more than 1 billion breeding values stored from the different analyses performed on various combinations of flocks. About 1000 flocks are active with about 750 of these actively performance recording. The others use the SIL database as a pedigree only storage and reporting service.

SIL is committed to appropriate developments being implemented after rigorous testing. In 1999 SIL started with genetic evaluations for Growth, Meat (carcass merit), Reproduction (fecundity), Lamb Survival and Wool. Since then we have added genetic evaluation modules for Resistance to internal parasites, Resilience to internal parasites, Resistance to facial eczema (a fungal toxin in pasture in the North of NZ), Wool quality (for mid-micron and fine wool sheep), Dag Score, Hogget Lambing (fertility and fecundity) and Twinning rate (more twins, less triplets at same lambing percentage).

SIL reports

A key feature of SIL that has proven a winner with breeders is the ability to design their own reports. This allows them to focus on the issues most important in their breeding programme. In addition, it allows breeders to migrate from their previous recording system to the SIL system without dramatic changes in the way information is presented.

SIL offers standard indexes for the main sheep types – most breeders in NZ using either Dual Purpose or Terminal Sire SIL indexes. These use a common currency of cents per ewe lambing – so the relative value of a ram can be estimated from a knowledge of how many ewes he will be mated to over the number of years he is kept. The SIL system allows breeders or breed groups to easily implement their own custom indexes.

Across-flock evaluations

SIL fosters the use of across-flock evaluations to provide more robust information to breeders and their ram buying clients. It actively promotes the use of link sires to establish strong genetic connections between flocks.

Initially a small percentage of breeders participated in across-flock genetic evaluations. Now the majority do. Our largest across-flock genetic evaluation, SIL-ACE, comprises over 300 flocks and over 3 million animals are evaluated every two months. Results are placed on the SIL website. It is fair to say that SIL does not provide as good an access to the results of genetic evaluations as does Lambplan. However, SIL is actively working on developments in this area and hope to introduce a more powerful, web-based “Search Tool” in 2009.

SIL does have strict agreements with breeders using the system with regard to who can access their data. Data collected on farm is the property of the flock owner.



SIL, Lambplan & Stockscan

Our genetic evaluation system is nearly identical to that of Lambplan. One area we differ is that SIL currently does not adjust carcass traits to constant carcass weight.

Typically NZ breeders collect information earlier than do Australian breeders. However when we have compared the breeding values produced by each system they show that there is very high correlations (0.95-0.99) between the breeding values produced by each system from the same dataset.

We do not identify animals in exactly the same way as Sheep Genetics (Lambplan) but we can readily translate data from SIL to Lambplan and vice versa. We have developed simple protocols to exchange data with Lambplan. Currently we do this routinely for Corriedales and undertaking a test of this for Coopworth sheep. With this data exchange, both SIL and SG (Lambplan) perform genetic evaluations on the combined trans-Tasman dataset, with each company reporting to their breeder clients in the formats allowed by their systems. SIL has not produced reports using Lambplan indexes. Under the agreement we have, the exchanged data cannot be used by the other group for anything other than this trans-Tasman evaluation.

Trans-Tasman evaluations are driven by the breeders, not SIL. We work with a nominated contact person from the NZ group who is responsible for obtaining flock owner permission to participate. We deal with SG (Lambplan) on data exchange but perform our own analyses and configure our own reports to suit the NZ breeding group.

Historically, Stockscan have provided a lot of raw data to SIL, both meat scanning and pregnancy scanning. For Meat evaluations SIL uses the raw measurements such as muscle width and depth, not derived traits such as eye muscle area.

Raw data versus breeding values and indexes

A guiding principle of SIL is that raw data is of little value when the results of robust genetic evaluations are available. Such evaluations remove biases due to such things as birth rank, age of dam or date of birth, while adjusting the estimates of genetic merit based on the performance of relatives. Raw data can be useful where traits are strongly inherited and easy to assess visually (e.g. some wool traits). However, improvement of these traits can still benefit from the use of modern evaluation systems. For lowly heritable or difficult to measure traits, these modern methods offer major gains in the rate at which traits can be improved using only raw data.

Perhaps the strongest argument for the robust genetic evaluation methods of SIL and Lambplan is the benefits gained from across-flock evaluations where there are strong genetic connections between flocks. From such evaluations, animals from different flocks can be fairly compared for estimated genetic merit.

We do not exchange BVs with other groups. After rigorously comparing results from the Lambplan and SIL systems analyses from the same datasets we are confident that data from SIL breeder client flocks is being analysed by Lambplan in a way that matches closely the philosophy of SIL.



Does it work?

A recent review of the rate of genetic gain being achieved by SIL flocks shows that the introduction of successive improvements in the genetic evaluation system have led to lifts in the rate of genetic gain achieved by the breeding industry (copy attached).

Yours sincerely

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Attachments: Article from Mainland Sheep, a Country-Wide special edition, on rates of gain achieved by NZ sheep breeders

