The Genetic Progress Report – building awareness and taking action

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Introduction

We make choices. Everyday. Our choices are driven by our knowledge, past experience, influence of peers and the environment around us. One of the most important long term decisions on farm is the choice of bull made for every joining. Bull selection choices are permanent and their impact compounds over generations. As it takes several years to see results, it has been difficult to monitor the effectiveness of choices at a herd level. This is further exacerbated by the nature of typical performance measures (milk yield, reproductive performance, cell count, type evaluations etc) which report the result of both genetic and environmental components. To help farmers quantify and see the effectiveness of their breeding choices, ADHIS has developed the Genetic Progress Report. The Report is a within-breed analysis of a herd over a ten year period and illustrates genetic gain for profit, production, type, longevity, fertility and mastitis resistance.

The purpose of this overview is to describe the tool and its benefits to dairy farmers and service organisations.

Conceiving a Genetic Progress Report

The Genetic Progress Report concept was developed in collaboration with farmers through several discussion groups who were frustrated because it was hard to see the results of their genetic choices. Early versions of the Genetic Progress Report, which only reported genetic trends for profit and production, prompted comments such as

- I can see the impact of the decision we made to purchase very cheap and low genetic merit semen during a bad drought year. Those cows, and their daughters are still in the herd today and will take a long time to get rid of. (This comment emphasises the importance of making a good decision with every joining).
- I can see the faster genetic gain we have made since I took over the breeding decisions from my Dad. (This is the first time this person was able to visualise the difference in his bull choices)

During the development of the Genetic Progress Report, it became clear that the ability to look at individual herd performance evokes a more strategic level of discussion and focused attention on choosing high genetic merit bulls – for every joining.

Collaboration with groups of service providers identified a number of uses for the Genetic Progress Report in their businesses. Herd test centres recognise the value in building on herd recording data that was already being collected. Bull companies have identified opportunities to work more closely with their clients to identify focus areas in their breeding programs. Dairy advisers working in

specialist areas, such as fertility, see the Genetic Progress Report as another tool to help lift on-farm productivity.

Through the development and consultation period, the Genetic Progress Report has evolved to include a range of benchmarking parameters, genetic merit trends for multiple traits and an analysis of those trends which will provide benefits to farmers and their herd improvement service providers.

The Genetic Progress Report – for farmers.

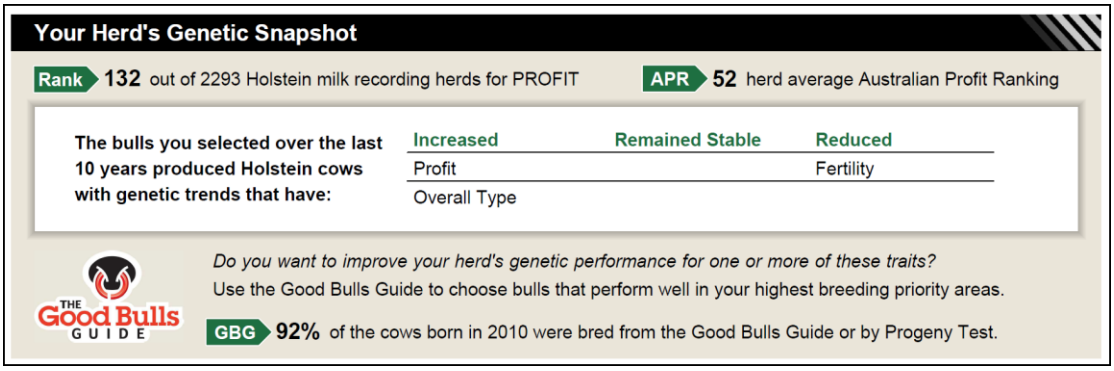
The Genetic Progress Report offers a farmer their own herd's genetic picture with little extra effort.

For most herd recording farmers there are not extra jobs and no extra forms required to access a Genetic Progress Report. For most farmers, the Report will be easily accessible through herd test centres. Your herd information which is collected through regular herd recording is routinely used to produce the cow ABVs upon which this Report is based. As is the case for all ABVs, the Report is independent and backed by strong science.

A Genetic Progress Report illustrates the impact of bull choices 'on my farm'. For most farmers, the Report demonstrates and re-enforces the steady improvements they have made in the areas their breeding program has focused on. At the same time, farmers can compare themselves against the national average and the top 10% of herds in the country (figure 1) and make a choice about what traits might become a focus when selecting bulls.

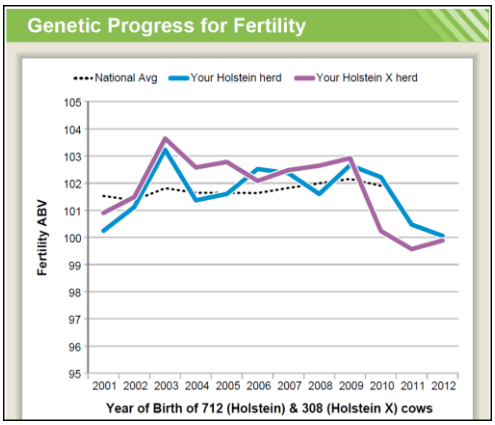
Benchmarking pushes us to ask the question 'could I have done better'?

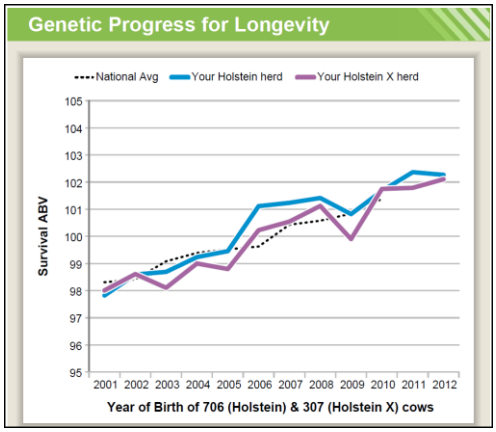
Figure 1 An example of trend analysis in a Genetic Progress Report



Components of profit, such as fertility, longevity and mastitis resistance can be very difficult to monitor at a herd's genetic level. The lower heritability of this group of traits (Pryce et al., 2010) means that the animal's environment and management can cloud our understanding of genetic changes in a herd. As the Genetic Progress Report is based on ABVs, it focuses only on the genetic component. It provides a longer term view of the hidden gains (or losses) that have been made in these areas of growing interest such as those in figures 2 and 3.

Figures 2 and 3 An example of a Genetic Progress Report – fertility and longevity graphs





Backing up the Genetic Progress Report is the Good Bulls Guide that provides lists of highly ranked bulls for the traits and index illustrated in the Report. These two tools provide a pathway for farmers from awareness of their herd's current trends to action in making future bull selection decisions.

The Genetic Progress Report – for service providers.

The Genetic Progress Report offers herd improvement service providers a value-adding opportunity to their existing range of services.

Herd test centres will soon be able to provide their clients with this new analysis tool using existing data sources. The Report builds on their many years of commitment to data capture. It provides another point of engagement to help their clients build stronger herds for the future.

During the development phase, it was clear that the Genetic Progress Report instigates further interest in bull choices. Bull choices are the main driver of genetic gain on most farms. The Report provides a visual picture that raises the awareness of the impact of past choices. The Report lays a firm foundation for discussions around both the quality and quantity of semen to be used in future joinings.

Summary

The Genetic Progress Report has been a key development activity to raise awareness of genetic trends within a herd and prompt targeted bull selection choices to improve the next generations. The Report will provide herd-specific feedback to Australia's herd recording dairy farmers. Its use in high profile herds as 'case study' farms will have a positive flow-on effect about the importance of bull selection to non herd-recording herds. Herd improvement service providers benefit from a new tool that value-adds to existing herd recording practices and instigates interest in bull choices. The Report is a practical output of ADHIS and Dairy Australia's investment in genetic evaluation, genomic technology and genetics extension.

References

Pryce, J. van der Werf, J. Haile-Mariam, M. Malcolm, B. Goddard, M. (2010) A technical manual describing the Australian Profit Ranking (APR) index. ADHIS publication.