



# National Breeding Objective

## 2019/20 review recommendations

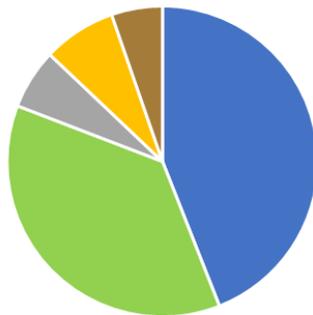
### Key recommendations to industry

1. Balanced Performance Index: update values for fat, protein, feed and labour and add further emphasis on Daughter Fertility.
2. Balanced Performance Index for Jerseys: as above plus exclude Feed Saved
3. Health Weighted Index: updated values for fat, protein, feed and labour and double the weighting on Daughter Fertility
4. Type Weighted Index: discontinued but add a new table to the Good Bulls Guide printed publication and excel downloadable file that ranks bulls by Overall Type and Mammary System.
5. Base (used to compare animals): no change to base but add a breed purity filter so it is a truer reflection of the breed.

### What the new indices look like

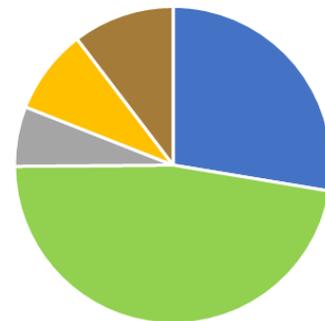
Both the recommended BPI and HWI have more emphasis on health and fertility than the current indices, however the pie chart shows that HWI has significantly more emphasis on health and fertility (green) and less on production traits (blue). The impact that the recommended indices will have over time is shown on page 3.

BPI (recommended)



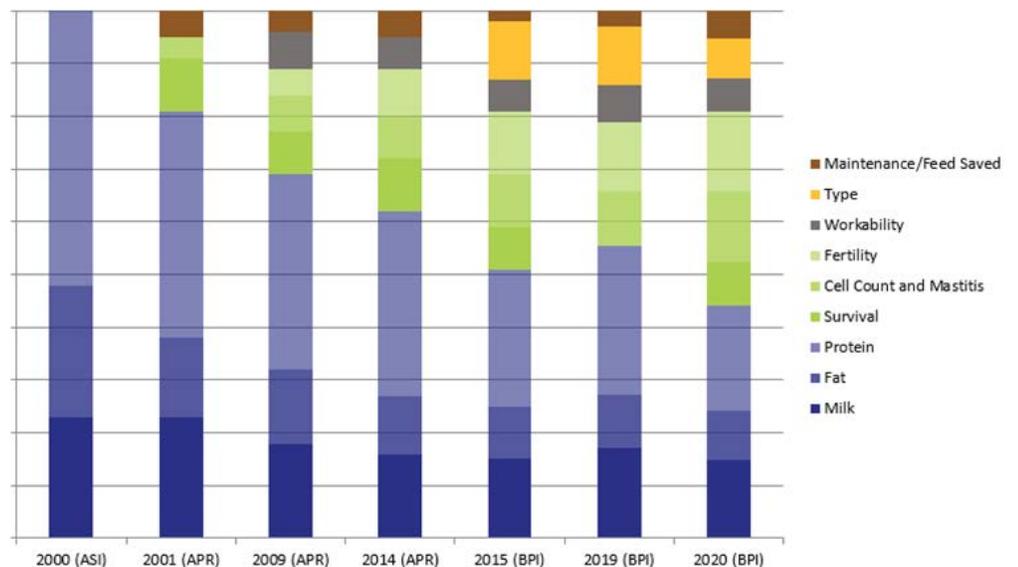
■ Production ■ Health & Fert ■ Workability ■ Type ■ Feed

HWI (recommended)



■ Production ■ Health & Fert ■ Workability ■ Type ■ Feed

The chart at right shows how the main Australian Index (ASI/APR/BPI) change over time. The recommended BPI (2020) has less emphasis on production traits (coloured blue) and more on fertility and health traits (green).



## NBO Review

The NBO review is overseen by DataGene's Genetic Evaluation Standing Committee who determine the key themes for the review. The process involved a survey to explore broad industry views on the key themes and scientific analysis of 21 options for index refinement. From this, the Standing Committee has made five recommendations for consideration by industry. These recommendations will be discussed with stakeholders during June 2020 with a decision expected in July. Any changes to the index will be made in December 2020

The Genetic Evaluation Standing Committee identified the following themes for discussion in this NBO Review: base change, fat : protein price ratio, longevity, fertility, feed efficiency, new traits, multiple indices.

## Survey

A total of 307 people participated in the NBO Survey, of which two thirds (196) were farmers.

The BPI was nominated as the most useful index by 71% of participants, with 24% favouring HWI and 16% favouring TWI. Participants could select more than one index. 24% did not use any Australian index (BPI, HWI or TWI). Only about 4% relied on TWI exclusively.

### Trait priorities

Daughter Fertility was significantly more important than any other trait. The table shows four priority levels for traits (no significant difference between traits within a level).

**Table: Industry priorities for breeding traits (survey)**

Highest priority	Daughter Fertility
Priority level 2	protein %, temperament, fat, fat %, survival/longevity, somatic cell count, mastitis resistance, calving ease, type
Priority level 3	milking speed, likeability, milk L, feed saved
Lowest priority	Gestation length, heat tolerance

## Base change

The last base change occurred in 2014 following a period of annual base adjustments. There isn't a right/wrong answer from a scientific point of view.

While no base change is recommended, the impact of changing the base is fully described in the NBO Options Paper.

Refining breed purity by ensuring a consistent 4-digit breed code means that Jerseys would be fairly compared to Jerseys.

*Recommendation: refine the base by including a breed purity filter but keep the current base group.*

## National Breeding Objective

The National Breeding Objective (NBO) describes an agreed group of desirable traits, providing breeding direction for both bull and cow breeding across the country. Australia's NBO is aimed at increasing net farm profit. It is expressed through the three breeding indices – Balanced Performance Index (BPI), Health Weighted Index (HWI) and Type Weighted Index (TWI).

The NBO is reviewed every five years, to ensure it keeps pace with the evolving needs of dairy businesses, new knowledge and breeding technologies. The previous review, undertaken in 2014, resulted in the introduction of the three indices (BPI, HWI, TWI) in 2015. Since then there has been a sustained increase in the utilization of Australian indices.

## Fat : protein price ratio

The BPI is an economic index based on input costs and farmgate returns for milk and stock. Milk price is a vital component of the analysis. If the relative price paid for fat to protein changes then it is appropriate for breeding indices to reflect this.

An analysis of three fat : protein price ratios was conducted. However, there is little evidence of a national shift in farmgate price ratio to justify an increase in the price ratio applied to the BPI, HWI or TWI.

*Recommendation: maintain the current milk pricing policy resulting in no change to the fat : protein price ratio.*

## Longevity

The two most important determinants of a dairy bull's genetic merit for profitability are milk yield and survival.

Given the strong support for survival in the survey, only one option was considered which was to include the Survival ABV (rather than residual survival which had recently been removed from the BPI).

*Recommendation: place all of the economic value of survival on the trait itself.*

## Fertility

Fertility is the No 1 priority for surveyed farmers. Most people (76%) support that HWI should have even more emphasis on fertility and health traits. The analysis showed that increasing the weighting on fertility in the BPI by a further 50% maintains it as an economically efficient index while balancing the strong feedback from industry.

*Recommendation: increase the weighting of fertility in the BPI by a further 50% and double its weighting in HWI.*

## Feed efficiency

The current BPI has Feed Saved ABV weighted at 50% of its true economic value. The survey indicates the industry does not fully support a full weight on Feed Saved in the BPI.

In Jerseys, the negative impact of Feed Saved on liveweight inhibits the ability for Jerseys to compete in mixed herds and may affect calf survival.

*Recommendation: No change to the 50% weighting of Feed Saved in BPI, except for Jerseys, where Feed Saved will be excluded. In the HWI, apply full economic weight of Feed Saved for all breeds.*

## New traits

Since the last NBO review, several new traits have been added to genetic evaluation, including heat tolerance and mastitis resistance. The survey responses supported only the addition of mastitis resistance in all index options.

*Recommendation: mastitis resistance is the only new trait to be added to all index options.*

## Multiple indices

Both the survey results and an analysis of marketing materials used to promote bulls shows the BPI is most popular, followed by HWI. The TWI is used by only a small minority of the industry.

*Recommendation: discontinue the TWI. Instead, publish tables for Overall Type and Mammary System in the Good Bulls Guide (excel files and printed document).*

## Further reading

[NBO Options Paper.](#)

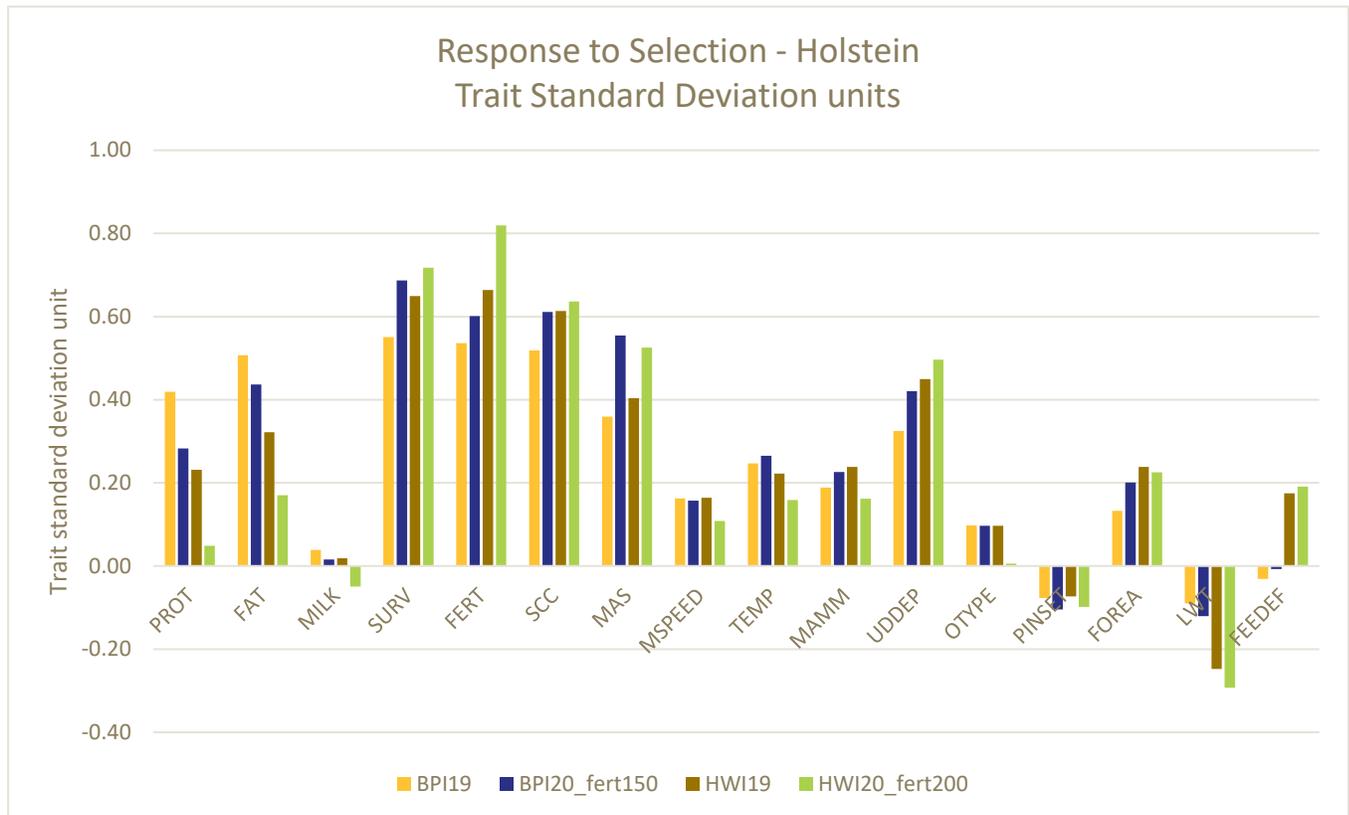
[NBO recommendations to industry](#)

## More information

Michelle Axford

Group Leader: Genetics and Delivery, DataGene  
Ph 0427 573 330 E: maxford@datagene.com.au

[www.datagene.com.au](http://www.datagene.com.au). June 2020



## Response to Selection – Jersey Trait Standard Deviation units

