

## MEMORANDUM

**TO:** New Zealand dairy industry  
**FROM:** Rachel Wood  
**DATE:** 26 April 2010  
**SUBJECT:** Decision to re-base the Animal Evaluation system — changing from a 1995 base to a 2000 base — for implementation in June 2010.

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- The DairyNZ subsidiary New Zealand Animal Evaluation Ltd (NZAEL) provides the Breeding Worth index (BW) for the purpose of ranking AB dairy sires according to the industry goal to “identify animals whose progeny will be the most efficient converters of feed into farmer profit”.
- NZAEL also controls the genetic base for the Animal Evaluation system. The genetic base is the group of animals whose average evaluation is set to zero for all traits. Estimates of genetic merit are reported against this base of zero.
- The last update took place in 2008, when the Animal Evaluation system changed its base to a 1995-born cow. At that time, NZAEL also made the decision to comply with international conventions, which is to update the genetic base every five years. This year will see the Animal Evaluation system change its genetic base to the group of cows that were born in 2000 and that had performance records for all traits in the evaluation system in the dairy season 2002/03.
- The principal reason for updating the genetic base is to provide comparisons against a more familiar group of cows for current farmers than cows born in 1995.
- In practice, farmers will notice lower reported Breeding Worth and most trait Breeding Values after the genetic base is updated, because the average cows born in 2000 are substantially genetically superior to the average cows born in 1995.

**The implementation date for this updating of the genetic base is Saturday 26 June 2010 <sup>1</sup>**

**For the Breeding Worth (BW) index you can expect the reported BW for each animal to be approximately \$41 lower after the genetic base change.**

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<sup>1</sup> **NOTE:** This update requires a change to the AE schedule. The above run date will replace the AE run date currently scheduled for 12 June. The revised data deadline date is now the 11 June 2010.

Re-basing does not affect the ranking for any animal.

Farmers will have to be careful not to compare reports generated before 26 June 2010 with reports generated after that date.

### **Reasons for updating the genetic base**

Discussion by NZAEL User Group members and NZAEL directors has identified various reasons for adopting a schedule of routine updates of the genetic base:

- current cattle are compared with recent cattle rather than cattle from much earlier generations;
- attention is focused on the elite animals when many animals have estimated breeding values and BW close to zero;
- updating can be part of farmers' routine expectations if performed regularly;
- the time of updating provides a natural point for reinforcing the message about progressive genetic improvement;
- the international convention is for updates at 5-yearly intervals.

### **Future schedule**

Proposed future planned updates of the genetic base.

2010 – update to a base of cows born in 2000

2015 – update to a base of cows born in 2005

2020 – update to a base of cows born in 2010

The decision on which month to implement updates in 2015 and later years has not yet been made.

### **Extension message**

Genetic evaluations are comparisons

A genetic base is needed because measures of genetic merit are not absolute measures. “Genetic evaluations are not absolute. Only differences between animals can be predicted; in fact differences between all pairs of animals. But the exact genetic value cannot be predicted for any animal.”<sup>2</sup> Because genetic evaluations are comparisons rather than absolute measures, it makes sense to compare with something familiar. Cows born in 1995 are no longer familiar to many farmers, whereas most farmers have some sense of familiarity with cows born in 2000.

### **Across breed base**

The 2000 genetic base cows will represent all breeds and crosses born in that year.

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<sup>2</sup> L. D. Van Vleck, Animal Model for Bull and Cow Evaluation, *Large Dairy Herd Management*, American Dairy Science Association, 1992, page 10.

## All traits are affected

The AE system provides genetic evaluations for over twenty traits. All traits will be included in the proposed update. You gain a sense of the changes at implementation time by inspecting the current averages for the cows that will become the genetic base animals on 26 June.

TRAIT	Average	TRAIT	Average	TRAIT	Average
Breeding Worth	41	Adaptability to Milking BV	0.01	Legs BV	0.02
Milkfat BV	5.1	Shed Temperament BV	0.01	Udder Support BV	0.05
Protein BV	4.6	Milking Speed BV	0.03	Front Udder BV	0.06
Milk Volume BV	46.5	Overall Opinion BV	0.05	Rear Udder BV	0.07
Liveweight BV	-1.6			Front Teat BV	0.06
Fertility BV	-0.08	Stature BV	-0.04	Rear Teat BV	0.07
Somatic Cell BV	0.07	Capacity BV	0.04		
Residual Survival BV	-7.1	Rump Angle BV	-0.03	Udder Overall BV	0.08
Total Longevity BV	47.6	Rump Width BV	-0.00	Dairy Conformation BV	0.06

Each animal in the Animal Evaluation system will have its reported Breeding Worth estimate, and its Breeding Value estimate, changed by the value you see in this table (note: two more Animal Evaluation runs will occur before the 26<sup>th</sup> June so these figures may change slightly).

For most traits the change will mean a reduced reported BW or BV, because the new comparison is against better cows than the 1995 cows. An exception is female fertility. For this trait the 2000 cows were slightly worse than the 1995 cows, so reported breeding values will be slightly higher after the re-basing for this trait.

***BW*** — each animal will **lose** \$41 because the new comparison is with a better group of cows, e.g.

Before re-basing

Cow 300 BW estimate of +\$141 / 54 (with 54 being the reliability of the estimate)

After re-basing

Cow 300 BW estimate of +\$100 / 54 (reliability of estimates is unaffected by re-basing))

***Overall Opinion BV*** — each animal will **lose** 0.05 from the Overall Opinion scoring scale because the new comparison is with a better group of cows

Before re-basing

Bull W Overall Opinion BV estimate of +0.37

After re-basing

Bull W Overall Opinion BV estimate of +0.32

***Fertility BV***— each animal will **gain** 0.08% on the Female Fertility six-week in-calf rate scale because the 2000 cows were worse than the 1995 cows for this trait, on average

Before re-basing

Bull Z Female fertility BV estimate of -0.10%

After re-basing

Bull Z Female Fertility BV estimate of -0.02%

## **Impacts on Production Worth and Lactation Worth indexes**

Updating the genetic base has implications for the Production Worth (PW) and Lactation Worth (LW) indexes. In the dollar terms in which these are reported, these indexes will fall by about the same amount as the BW index falls.

### PW

For the PW, indexes for all animals on the database will be updated on 26 June.

### LW

Historic LW index numbers will NOT be updated. They will remain relative to the base operating in the dairy season that the lactation was recorded. Lactations commencing in the 2010-2011 dairy season will be reported with an associated LW that is relative to the new 2000 genetic base established on 26 June.