

Australian Profit Ranking introduced

A new index, called the Australian Profit Ranking (APR) has been introduced as part of the February 2001 ABV release.

The aim is to provide a profit-centred breeding objective for ranking proven bulls.

Australia's dairyfarmers now have a profit-centered breeding objective to rank bulls for genetic merit and to assist with breeding decisions.

The new index, called the Australian Profit Ranking (APR), has been introduced in the February 2001 ABV release.

ADHIS Executive Officer, Robert Poole, explained that the APR incorporates production and non-production traits that are currently available as ABVs and found by ADHIS research to have an impact on profit.

'The traits included in the index have been determined by ADHIS research based on the data base used to calculate past ABVs. Traits effecting survivability and manageability, and therefore profit, were identified. A model of a typical Australian dairy herd was then used to calculate the importance of these traits. In this way the appropriate weighting of each trait influencing profit was determined.'

The ADHIS research group also assessed the 'sensitivity' of the APR to different assumptions about the cost-structure of future dairying. For instance, different assumptions about production per cow, milk prices, beef prices and feed costs were made. It was found that changing those assumptions made little difference to the usefulness of the APR in estimating profit due to genetic gain.

What's in the Australian Profit Ranking?

The APR includes traits relating to:

- Production—based on a revised ASI (Australian Selection Index) that accounts for feed costs as well as payment for milk components.
- Survival—including type traits found to influence survivability of cows in the herd and farmer likeability.
- Milking Speed and Temperament—that influence the manageability of cows and therefore affect profit.

A detailed explanation of the make-up of the APR is shown on the opposite page.

Why is the Australian Selection Index different?

The new ASI differs from the previous ASI due to including feed costs. In other words the new ASI calculation reflects profit rather than being a simple payment index.

For example, the feed cost of producing a kg of fat is almost double the cost of producing a kg of protein. Therefore the profit ratio of four to one is appropriate, rather than a simple payment ratio which is more like two to one. Similarly, the size of the negative weighting on milk reflects feed costs in addition to volume penalties imposed by payment systems.

With the new ASI it is expected that breeding progress for protein, and to a lesser extent fat, will continue. Milk volume will continue to increase as well but not to the same extent as would be the case without the negative value on volume. Fat percentages are expected to remain stable while protein percentages are expected to increase slightly.

The important point is that the new ASI is now weighted for protein kg, fat kg and litres of milk, with values that are appropriate to the value of the components and the cost of producing them.

Survival Index

The APR includes a *survival index*.

The survival index is based on type traits, identified by ADHIS as influencing, and therefore predicting, survival of cows in the herd. These traits are Overall Type, Pin Set and Udder Depth.

The survival index also includes the workability trait of farmer likeability which has been found to be useful in predicting survivability.

Other type traits for which ABVs are available were found not to directly influence survival, or were fully accounted for by the traits included in the survival index.

Milking Speed and Temperament

Milking Speed and Temperament are included in the APR as traits affecting manageability and profitability.

These traits have a large enough influence on profit to be included separately to the traits in the survival index.

Other traits affecting profit

The APR being introduced has allowed for the inclusion of ABVs for somatic cell count (SCC) and daughter fertility. ABVs for these traits are presently being

developed by ADHIS. When the ABVs are available they will be included in the APR with weighting to be determined at the time.

Liveweight was considered by ADHIS for inclusion. Liveweight was found to have an influence on profit (for eg: through feed efficiency, and cost of replacements) and could be predicted by type traits for which ABVs are available. However, in consultation with ADHIS stakeholders, it was decided that the effect of including liveweight was quite small and would make the APR less acceptable as a breeding objective for some groups of farmers.

ADHIS February 2001 ABVs

Enclosed with your *Genetics Australia* magazine is the official ADHIS listings of the top bulls with ABVs and ABV(i)s. All lists rank the bulls on Australian Profit Ranking (APR).

We recommend you check where bulls you are thinking of using rank on the basis of their APR and other ABVs.

On the ADHIS rankings for bulls with fully publishable ABVs with semen available, *Genetics Australia* bulls account for 17 of the Top 40 Holsteins (including 7 of the Top 20), and 7 of the Top 10 Jerseys available.



Correction

The ADHIS official data panel inserted in this magazine has an error in the proof for **TRUMAN**. His correct ABV is:

Production									
APR	Rel %	ASI	Prot kg	Prot %	Milk L	Fat kg	Fat %	Rel %	
102	85	90	21	.19	400	33	.23	91	
109 daughters, 71 herds, 0% RIP									
Type			Workability				Surv	Calv	Ease
OT	Mamm	Rel%	MS	Temp	Like	Rel%			
1.1	1.0	72	93	90	92	77	2	4	

Using the APR to rank bulls

Genetics Australia's consulting Geneticist Dr Sandy McClintock encourages farmers to use the APR as their primary means of ranking bulls.

'The fact that we now have an index which combines production and non-production traits that have an affect on profit means we can rank bulls for the profitability of their daughters.'

'In other words the APR ranks bulls for their ability to produce profitable daughters, measured by the contribution of those cows to production, their survivability in the herd and their manageability.'

'The APR will be improved in the future by the inclusion of measures for somatic cell count and daughter fertility, but at the present time the APR includes all traits we currently measure and have ABVs for. Those traits that have been shown to have

an influence on profit are included, and they are included with weightings that have been calculated on the basis of their economic effect.'

'In order to get the best value from the APR bulls should be selected for use on their APR ranking. As all traits that have an influence on profit have been included, there is no need to consider other traits separately. Independent selection for type traits, workability traits or production should be avoided as these traits have been accounted for in the APR.'

Sandy also points out that the APR can be used to directly assess the value of individual bulls.

'An APR of 100 says that the genetic impact of a bull is expected to result in about \$50.00 per cow per year (the genetic value being 100, but halved as a bull is expected to pass half this

genetic superiority to his daughters compared to the ABV base). A difference between two bulls of 10 APR suggests that the better bull will transmit genetics to his daughters expected to be worth \$5.00 per cow per lactation.'

Sandy suggests that, as for other ABVs, reliability of the measure is important.

'We need to remember that ABVs are estimates of the breeding values of bulls. The confidence we can have in the estimate depends on the reliability of the breeding values. As with all ABVs, the more information we have to base the APR on, the greater is the reliability.'

'Usually this means more daughters will lead to higher reliability. In the case of the APR, where there are a larger number of traits contributing, reliability will be lower where information

on some of the traits is missing.'

'Even where some information is missing, and the reliability of the APR lower, the APR is still the best estimate available of the likely contribution of a bull to profit. The alternative is simply guesswork!', suggests Sandy.

Sandy concludes that the Australian Profit Ranking combines all the available ABV information for a bull into a single number (the bull's APR) so that the most profitable bulls are at the top of the list. ADHIS has used the best available information to give the correct weightings to all of the traits that contribute to the APR. If too much weight is placed on any particular trait profitability is compromised.

So, if your aim is to breed profitable cows, then look at the APR—but watch the semen price and the APR reliability!

How the APR is calculated

i If you want to know more about using the Australian Profit Ranking in your breeding decisions, call our freecall number 1800 039 047 for details.

Australian Profit Ranking (APR)

$$\text{ASI} + (3.9 \times \text{Survival Index}) + (1.2 \text{ Milking Speed ABV}) + (2.0 \times \text{Temperament})$$

Survival Index

$$(0.25 \times \text{Survival ABV}) + (0.38 \times \text{likeability}) + (1.34 \times \text{Overall Type}) + (2.30 \times \text{Udder Depth}) + (1.66 \times \text{Pin Set})$$

Australian Selection Index (ASI)

$$(3.8 \times \text{Protein ABV}) + (0.9 \times \text{Fat ABV}) - (0.048 \times \text{Milk ABV})$$

Note: Type traits and likeability are part of the survival index. For traits other than production, the figure used in calculating the APR is the **bull's ABV minus the breed average.**

1. Calculation of ASI

Example
RAMESES

Protein kg	Fat kg	Milk L	ASI
32 X 3.8	41 X 0.9	1113 X 0.048	105

2. Calculation of Survival Index

Survival ABV	Likeability	Overall Type	Udder Depth	Pin Set	Survival Index
6	7	1	-3	3	13

3. Calculation of Australian Profit Ranking

ASI	Survival Index	Milking Speed	Temperament	APR
105	13	6	5	129