

**SUITABILITY AND ACCEPTANCE OF THE PRESENT  
AUSTRALIAN DAIRY HERD IMPROVEMENT SCHEME  
TO SEMEN PRODUCTION CENTRES IN AUSTRALIA**

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**INTRODUCTION:**

The initial goal of A.D.H.I.S. was to produce better and more accurate genetic ratings on bulls and cows, and to encourage the widespread use of this information to improve the overall genetic quality of the Australian dairy herd.

There is little doubt that the first mentioned objective within this goal has been achieved, but that achievement does not and should not be permitted to imply, that the system at its current level of development is perfect. The need for some refinements to the collection and processing of data has been recognised and is in hand. No doubt further design modifications will emerge as we gain experience. In the meantime, it is a well established fact that the A.B.V.'s are recognised by the dairy farming community as the most accurate means ever, in this country, of ranking bulls and cows on genetic merit. The scheme offers the bonus of being national.

The second mentioned objective of this goal has yet to be achieved. The passage of time and the sensible application of A.B.V. information at all levels of our industry, will ensure that the objective is achieved. Towards this end, I present the following observations on the suitability and acceptance of the scheme as it affects the breeding programmes and promotional efforts of members of the Australian Association of Artificial Breeders.

**1. PROMOTION:**

The availability of A.B.V.'s has created a new learning experience for all involved. Initial promotion has tended to concentrate on technical explanations of mechanics and design and on the merits of a few elite animals. Whilst such an approach may have been initially necessary to sell the concept and emphasise the value of output, future promotional effort should incorporate information to enable users to maximise benefit.

For instance, many farmers still question the validity of cow A.B.V.'s because they do not yet understand that the breeding value is calculated from the pedigree of the animal, the quality of contemporaries and production, not just the production of the animal itself. The difference between a breeding value and a production index must be emphasised in future promotion.

The release of bull A.B.V.'s has highlighted the performance of the best local bulls in comparison to the best available from overseas sources. Consequently, demand for dairy semen produced locally by members of A.A.A.B. has increased by 14.2% and 3.6% respectively for the 1983 and 1984 calendar years, whilst sales of imported dairy semen fell by 16.7% and 14.3% over the same period. This encouraging trend has given new confidence and impetus to progeny testing and all members have experienced significantly increased interest in the young bulls which they have to offer.

Future promotional efforts must take emphasis off the few elite bulls in the population in favour of promotion of the overall quality of breeding programmes, basically for two reasons:-

(a) A.B.V.'s are approximate values, not absolute values:

Many people, including the administrators of breeding programmes, have been confused by the change which can occur in the A.B.V. of a bull as more daughter records are added to the survey. Generally, significant changes have occurred with only a few bulls, and the ranking of all bulls has remained relatively constant. The confusion has been caused by bulls of high reliability changing beyond the range of reasonable expectation.

There are two chances in three that the breeding value of a bull, or a cow, will stay within one standard deviation, and one chance in three that the breeding value will change by more than one standard deviation. The higher the reliability, the lower the range in standard deviation as depicted in the following table provided by Dr. M. Goddard of the Department of Agriculture, Victoria:-

RELIABILITY (%)	STANDARD DEVIATION FROM QUOTED A.B.V. (Kgs. fat)
10	13.2
20	12.4
30	11.6
40	10.8
50	9.8
60	8.8
70	7.6
80	6.2
90	4.4
99	1.4

To reduce the risks associated with an unexpected change in breeding value, farmers should be encouraged to use semen of several bulls of high average merit, rather than one bull of high individual merit.

(b) Breeding programmes are expensive to operate:

A high breeding value can be the product of a well designed breeding programme or the product of chance. No one programme can be expected to constantly produce the very best bulls.

The success of a breeding programme should be determined by the average genetic merit per dose of semen utilised, rather than by the merit of the odd highly rated bull produced. Promotion of highly rated individuals tends to ignore or mask this aspect. More importantly, it can result in loss of customer loyalty and interrupt the flow of vital income required to maintain programme scale and design. In the long haul, a stop start approach to progeny testing, as determined by the availability of funds for the purpose, will be detrimental to the genetic progress of the national herd.

## 2. BREEDING PROGRAMMES:

The A.B.V. is the best primary selection criterion ever available to semen production centres in Australia, but it is not the sole criterion, nor is it expected that it ever will be.

Sires to breed sons or replacement daughters receive secondary considerations such as fertility, physical soundness and freedom from genetic defects or undesirable characteristics in their initial crop of daughters. Prospective mothers of young bulls are screened to ensure that their A.B.V. has not been influenced by irregular calving pattern, preferential treatment or absence of competition within herd, together with traditional screenings as employed prior to the advent of A.B.V.'s.

The search for best cows could be hastened by inclusion in best cow lists produced by A.D.H.I.S., of certain information currently available only from State herd recording authorities or direct from farms. Basic information which would be helpful includes breed purity of the cow and her actual percentage test for butterfat and protein. Herd information could include the percentage of contemporaries by A.B. and the herd average A.B.V. The latter is currently computed and provided to each farmer but not to semen production centres as it is apparently regarded as being confidential to the farmer. Given the herd average A.B.V. and nothing else, sire selection could be improved as effort would be concentrated in genetically superior herds.

Experience with A.B.V.'s suggests to the layman that some aspects of design may require investigation and verification. These include:-

### (a) Protein Analysis:

Very few animals have positive test deviations for both protein and butterfat. If this is correct, continuous use of sires which are negatively rated for both constituents could ultimately result in a quality of milk which fails to meet minimum standards for sale. It is more likely that protein computations are incorrect as protein information has been available for a lesser period and on less cows than has been the case for butterfat. It could well be that the genetic base for protein differs from that of milk and butterfat.

### (b) Age Corrections:

A.B.V.'s of bulls tend to improve as later lactations of daughters are added to their two year old records. Are the age corrections valid and should different age correction factors apply to various sub-sections of the population?

(c) Predicted Lactation Lengths:

Lactations in progress are extended to a calculated full lactation equivalent at 300 days. Is this appropriate to Australian conditions and should the same extension formula apply universally to the population?

A development which is eagerly awaited by Association members is the release of part lactation mini BLUP sire surveys for bulls graduating from progeny test. This development will enable forward production of the most promising prospects and release of their semen simultaneously with the release of their first official A.B.V. It is expected that this development will reduce generation interval by one year.

Further steps to reduce generation interval and the costs of proven sire semen are possible by encouraging all farmers involved in herd recording to use, as a matter of course, a mix of semen from proven sires and progeny test sires. Developments in the technology of predicting breeding values coupled with an extensive publicity campaign may be necessary to bring this about.

3. TIMING OF RELEASE DATES OF INFORMATION:

Due to the extreme range in environmental factors affecting joining and calving patterns in Australia, no particular time of the year appears appropriate for the release of information. Suffice to say that accuracy, within reason, is more important than timing. It would appear that a release date of not later than the end of July in each year would be acceptable to the majority.

CONCLUSION:

The availability of national bull and cow breeding values has provided the dairy industry with a valuable yardstick for rational comparisons of genetic merit. Improved productivity of the herd will flow from the breeding decisions made from this information and will assist the future viability of dairyfarming to the benefit of the community at large. To achieve this, it is important that the scale of bull breeding programmes is at least maintained at current levels.

APPRECIATION:

It would be inappropriate of me not to take this opportunity, on behalf of the Association, to sincerely thank the Australian Dairy Farmers Federation, the Executive Officer of A.D.H.I.S. and all who have assisted in the development of the scheme to date. We look forward to a continuing co-operation with A.D.H.I.S. towards the maximum possible improvement of the genetic quality of the Australian dairy herd.