

**ASSOCIATION FOR THE ADVANCEMENT OF
ANIMAL BREEDING AND GENETICS**



Proceedings of the Eighteenth Conference

***Matching Genetics and the Environment
a New Look at and Old Topic***

**Barossa Valley, S.A. Australia
28th September – 1st October 2009**

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PRESIDENT'S MESSAGE

Welcome to the 18th Conference of the Association for the Advancement of Animal Breeding and Genetics (AAABG). I am proud to introduce these proceedings and trust that you enjoy their rich depth of endeavour and the breadth of topics.

Our 18th Conference is a time for us to celebrate our 30th anniversary. Over the last 3 decades world population has grown from 4.4 to 6.8 billion, a growth rate of 1.5% p.a. and comes during the period after the large gains in crop production from the green revolution. Food production growth can no longer come from expansion, but must come from increasing efficiency.

Despite increases in demand, food production has grown and is also meeting the challenge of declining terms of trade that are inconsistent across products. For example, in the past 30 years in real terms, wool prices have dropped by roughly 30% and lamb prices have risen by roughly 30% leading to major structural change in our sheep industry. While slowed by the current global financial crisis, we are on the verge of a livestock revolution with expected large increases in demand for animal foods resulting from increased affluence in developing economies.

Genotype by environment interactions (GxE) have been of interest to animal breeders for as long as we have records. As production systems are pushed further, the GxE becomes increasingly important. We have some excellent papers on the topic herein and I am certain this will continue to be a focus of the next generation of breeders.

As we achieve a greater understanding of biology and inheritance, we learn of greater complexity and the wonders of the world we live in. We still cannot predict with certainty what an individual animal will look like or how they will perform. However, we do have good industry recording programs. Relatives do resemble each other and by selection of superior parents, genetic progress has been substantial, is ongoing and has potential to accelerate significantly.

We are in a very exciting period as we observe the transition of molecular tools from descriptors of individual gene variants to that of whole genomes. Indeed, genomic selection has increasingly become part of the animal geneticist's vocabulary. The challenge ahead is to use these tools in multidisciplinary approaches for increasing production efficiency. To that end, Cooperative Research Centres have had a profound impact on livestock research and postgraduate training. Benefit-cost analyses of their impact have always been favourable for both producers and consumers and there are many papers from CRCs scientists and students in these proceedings.

Our food and fibre producers manage the biology of the system overlaid by micro- and macro-economic forces, environmental conditions and changing public perception of ethics in relation to animal welfare. A major aim in establishing AAABG is to increase the dialogue between producers, breeders and geneticists. This is a major challenge for each Organising Committee and we have tried some new strategies such as providing discounts for all producers and students and added formal Breeders' Days.

I trust that you enjoy the program we have put together and look forward to the rich experience of discussing the application of research results with close friends and colleagues.

Wayne S. Pitchford
President

**ASSOCIATION FOR THE ADVANCEMENT OF
ANIMAL BREEDING AND GENETICS**

EIGHTEENTH CONFERENCE

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AAABG was formerly known as the Australian Association for Animal Breeding and Genetics. Following the 1995 OGM the name was changed when it became an organisation with a joint Australian and New Zealand membership. The Association for the Advancement of Animal Breeding and Genetics is incorporated in South Australia.

THE ASSOCIATION FOR THE ADVANCEMENT OF ANIMAL BREEDING AND GENETICS INCORPORATED

OBJECTIVES

- (i) to promote scientific research on the genetics of animals;
- (ii) to foster the application of genetics in animal production;
- (iii) to promote communication among all those interested in the application of genetics to animal production, particularly breeders and their organisations, consultants, extension workers, educators and geneticists.

To meet these objectives, the Association will:

- (i) hold regular conferences to provide a forum for:
 - (a) presentation of papers and in-depth discussions of general and industry-specific topics concerning the application of genetics in commercial animal production;
 - (b) scientific discussions and presentation of papers on completed research and on proposed research projects;
- (ii) publish the proceedings of each Regular Conference and circulate them to all financial members;
- (iii) use any such other means as may from time to time be deemed appropriate.

MEMBERSHIP

Any person interested in the application of genetics to animal production may apply for membership of the Association and, at the discretion of the Committee, be admitted to membership as an Ordinary Member.

Any organisations interested in the application of genetics to animal production may apply for membership and, at the discretion of the Committee, be admitted to membership as a Corporate member. Each such Corporate Member shall have the privilege of being represented at any meeting of the Association by one delegate appointed by the Corporate Member.

Benefits to Individual Members

- While it is not possible to produce specific recommendations or “recipes” for breeding plans that are applicable for all herd/flock sizes and management systems, principles for the development of breeding plans can be specified. Discussion of these principles, consideration of particular case studies, and demonstration of breeding programs that are in use will all be of benefit to breeders.
- Geneticists will benefit from the continuing contact with other research workers in refreshing and updating their knowledge.
- The opportunity for contact and discussions between breeders and geneticists in individual members’ programs, and for geneticists in allowing for detailed discussion and appreciation of the practical management factors that often restrict application of optimum breeding programs.

Benefits to Member Organisations

- Many of the benefits to individual breeders will also apply to breeding organisations. In addition, there are benefits to be gained through coordination and integration of their efforts. Recognition of this should follow from understanding of common problems, and would lead to increased effectiveness of action and initiatives.
- Corporate members can use the Association as a forum to float ideas aimed at improving and/or increasing service to their members.

General Benefits

- Membership of the Association may be expected to provide a variety of benefits and, through the members, indirect benefits to all the animal industries.
- All members should benefit through increased recognition of problems, both at the level of research and of application, and increased understanding of current approaches to their solution.
- Well-documented communication of gains to be realised through effective breeding programs will stimulate breeders and breeding organisations, allowing increased effectiveness of application and, consequently, increased efficiency of operation.
- Increased recognition of practical problems and specific areas of major concern to individual industries should lead to increased relevance of applied research.
- All breeders will benefit indirectly because of improved services offered by the organisations which service them.
- The existence of the Association will increase appreciably the amount and use of factual information in public relations in the animal industries.
- Association members will comprise a pool of expertise – at both the applied and research levels – and, as such, individual members and the Association itself must have an impact on administrators at all levels of the animal industries and on Government organisations, leading to wiser decisions on all aspects of livestock improvement, and increased efficiency of animal production.

CONFERENCES

One of the main activities of the Association is the Conference. These Conferences will be structured to provide a forum for discussion of research problems and for breeders to discuss their problems with each other, with extension specialists and with geneticists.