

BREEDPLAN - Latest Developments

Brian Sundstrom

Adoption Rate in Australasian Seedstock Herds

BREEDPLAN is the Australian based and developed international beef cattle genetic evaluation program.

BREEDPLAN membership is mainly composed of bull breeding, seedstock herds. (Commercial herds use the information in their bull buying, and only the most intensive operations would need to actually enrol their herds). There are currently around 2,150 members in Australia and 1,350 in NZ. Most of this is through corporate membership arrangements with Breed Societies. BREEDPLAN is increasingly dealing with Breed Societies rather than individual members. The Societies have control of their databases and decide policy on such things as which traits they will provide EBVs on, and accuracy levels needed for publication. Societies also decide fee structures for their members, particularly the costs of conducting GROUP BREEDPLAN analyses.

Participation rates in most of the major temperate breeds are now very satisfactory, with virtually all the larger bull breeding herds enrolled in BREEDPLAN. The participation of these large herds is, of course, critical. In the Hereford breed for example, approx 75% of bulls sold, come from the largest 10% of herds, all of which

are in BREEDPLAN. As further indication of the involvement of bigger herds, it is interesting to look at the five main British breeds in more detail. In 2002, around 75% of registered cows in these breeds, were in herds of 100 or more. 87% of these cows were on BREEDPLAN. (See Table 1.) The total numbers of recorded animals and records processed, therefore, has continued to rise satisfactorily with this participation by large herds. An area of concern has been with some Tropical and European breeds, where there is still a need for greater participation (refer Table 2). Some Tropical breeds now have up to 35 - 70% of their registered females recorded with BREEDPLAN. This is a very significant rise since 1998 and there are definite signs of further rapid progress. The appointment of a Tropical Breeds Technical officer late in 1998, has greatly helped in this area (currently Christian Duff - Rockhampton 07 4927 6066).

Overseas Involvement

Overseas business is important as it allows BREEDPLAN overheads to be spread over more herds. It also assists international evaluations and the exchange of genetics. The use of BREEDPLAN overseas is very significant, particularly in New Zealand and North America. This is for both individual herds and particularly

Breed Associations. BREEDPLAN now conducts Trans-Tasman analyses for ten breeds and Murray Grey also include complete UK, US and Canadian Society data bases in their analysis. Devon include US data with their Aust/NZ analysis, and several other Breeds are in various stages of planning international BREEDPLAN evaluations with their overseas counterparts. These include Shorthorn, Hereford/Poll Hereford and Belmont Red/Bonsmara. The US Salers, Shorthorn and South Devon analyses have been conducted by BREEDPLAN for several years. The North American Hereford analysis is conducted by BREEDPLAN, and analyses for the South African Simmental, Brahman and Simbrah breeds. Business is steadily building in Argentina with 20 Angus and two Poll Hereford herds currently enrolled. Most of the Argentine Angus herds are linked, and combine for a group analysis. Individual herds are enrolled in Brazil, Thailand, Mexico, Canada, Namibia and the Philippines. The Canadian Angus and US Braunvieh pedigree systems are also run by BREEDPLAN. Currently there is significant interest in the UK and Uruguay.

Table 1. Participation in 5 main British Breeds in BREEDPLAN 2002

Herd Size	No. of cows	% cows in BREEDPLAN	Cumulative %
250 +	65,000	97	96
150-250	31,500	89	90
100-150	23,000	76	87
50-100	29,500	65	87
25-50	19,500	54	83
< 25	15,000	30	78
TOTAL	183,500		78

Table 2. Participation of Breed Groups in BREEDPLAN 2002

	% registered seedstock in industry	% cows on BREEDPLAN
5 main British breeds	64	78
Continental European	11	49
Tropical Breeds	25	52

Breeds and Traits in GROUP BREEDPLAN

GROUP BREEDPLAN, which compares animals across herds within a breed, is now by far the most widely used system. Within-herd analyses are used only by a small number of genetically-unlinked herds in the main breeds and by members of some smaller breeds. Some of the new Composite herds are also in this category.

The Carcase EBVs

BREEDPLAN EBVs for fat depth (FD), eye muscle area (EMA) have been available since 1990, and Yield% since 1996. Until 1999 they were calculated only from ultrasound scans of live stud cattle, mostly bulls.

Demand for a wider range of EBVs, including marbling, and the need to also use abattoir data, led to the major enhancements since 1999. This was possible through work by the CRC linking BREEDPLAN herds with progeny tests, scanning and detailed abattoir measurements. This enabled the merging of such inputs as bull and heifer scans from studs, steer scans from feedlots, steer abattoir carcase results and overseas data such as US EPDs (see Figure 1).

Carcase EBVs:

- are expressed on a 300kg steer carcase equivalent

- Combine abattoir carcase measurements with live scans
- Import overseas EBVs/EPDs and convert these to Australian equivalents for inclusion in the analysis.

Imported Animals

Figure 1 shows how carcase EPDs developed overseas on imported animals are incorporated into the analysis. The same concept is used for other traits e.g. using growth EPDs of imported US Brahman.

Mature Cow Weight

Optimum cow size is an important ingredient for profitable breeding herd management. Most commercial breeders do not want really big cows, yet need steers with adequate growth rate. The mature weight EBV introduced in 1999, assists breeders balance these potentially conflicting needs.

BreedObject - \$ Indexes

With increasing numbers of EBVs available, and the desire for balanced genetics, demand for methods of combining EBVs into an economically weighted \$ index has been steadily building. Many Breed Societies and studs, now use these on websites and in sale catalogues.

Price Differential at bull sales

In most breeds, which have a mix of BREEDPLAN users and non users, there are very positive price premiums for bulls with EBVs. Clearance rates are also much better.

In breeds with very widespread use of

BREEDPLAN, premiums are now more seen for bulls with a full range of EBVs which are balanced. Accuracy also attracts bull buyers in some situations e.g. birth weight.

Other Traits and Services

- Calving Ease. Several breeds now publish EBVs on sires, for Direct Calving Ease and Daughters Calving Ease. These are computed from birth weight, calving ease score and gestation length data. Breeds which have calving difficulty and do not have these EBVs, need to expedite data collection.
- Multibreed EBVs. The first Multibreed EBV adjustment table was released in March 2003 (see page 35).
- Temperament. There are some important initiatives in the area of temperament. The Limousin society has been offering Docility EBVs since 1999. Recent research by the CRC has shown flight speed, as recorded by a light beam on cattle leaving the crush, will be a good way to measure this trait, in Tropical breeds and perhaps some larger temperate studs (see page 26). The flight speed data also shows favourable links to tenderness.
- Feed efficiency research has now reached the stage where Angus, Hereford/Poll Hereford have sufficient data to provide the first trial BREEDPLAN EBVs. (see page 59)
- Electronic data transfer options by disc or Email are expanding, as are Animal Selection and Sale cataloguing search services on Breed Society websites.

The BREEDPLAN website (<http://breedplan.une.edu.au>) has links with most Breed Societies. All the BREEDPLAN Technotes are on this site. Newsletters and a set of Powerpoint slides explaining BREEDPLAN are among other items found here.

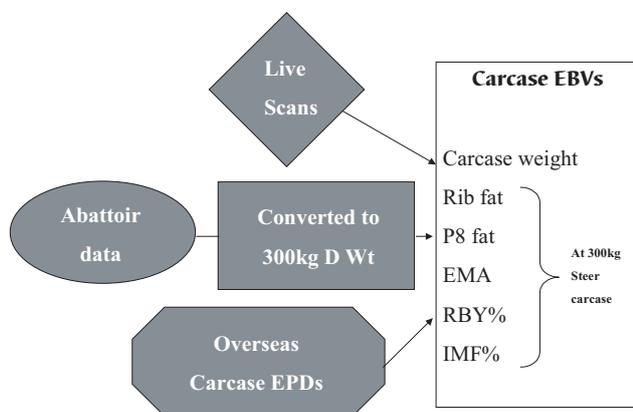


Figure 1. Information utilisation

- Incorporation of Gene Marker information. With the first marker for a commercial trait - GeneStar marbling - released last year, and more to follow soon, the incorporation of such information into BREEDPLAN is currently a major area of research at AGBU. An important point, is that it will add to, rather than replace current genetic evaluations such as BREEDPLAN. Take carcass EBVs for example. We currently calculate them from scans, abattoir data and overseas EPDs (Figure 1). Marker data will be another source, (Figure 2). The importance of this source will depend on factors such as the proportion of a trait's variation explained by the marker, and what other data is available on the trait. Research on this requires large unbiased data sets (not just the results from positive "tests").

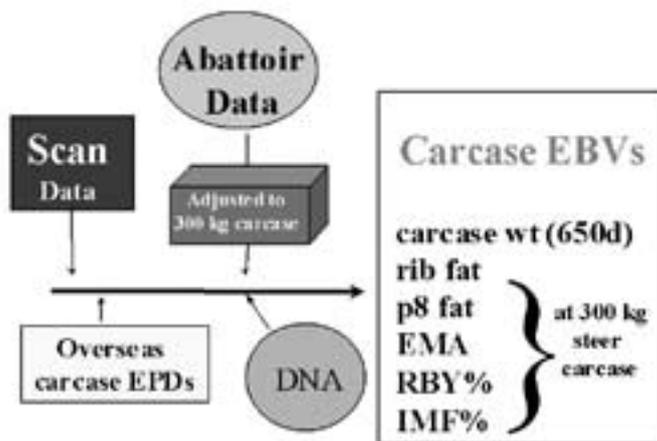


Figure 2. Information used in carcass EBVs



Performance classes at shows are one of the many continuing extension efforts to promote BREEDPLAN. In this one, at Hamilton, the author (arrowed) gives out Performance points (50%) while the visual judge allocates his 50%.

