Data analysis at AGBU over the past 6 months has allowed the development of the first conversion table for BREEDPLAN multi-breed EBVs. We have initially used 2,500 records from the Victorian Multi-breed EBV project, (Hereford, Angus, Limousin and Simmental) and 1,800 records from the Beef CRC1 Northern Crossbred Project (9 breeds over Brahman cows) See detail opposite. This has produced sufficiently accurate comparisons of four breeds for the growth traits. While we would have liked conversions for more breeds and traits, the required accuracy was unfortunately not possible from current data. We hope though, that this will be a sound start on which we can build.

**An adjustment table**

Our initial move towards development of full multi-breed BREEDPLAN EBVs has been to produce a simple conversion table based on the above data. This gives adjustment factors to add to within breed EBVs, making them comparable across breeds. Table 1 gives these adjustments for the growth traits for Angus, Poll/Hereford, Limousin and Simmental. Currently, only EBVs for gestation length and the weight traits can be compared across these four breeds. Further research is underway to add more traits and develop methodology for BREEDPLAN multi-breed EBVs from combined datasets.

**Examples:** To compare an Angus bull with a birth weight EBV from Angus BREEDPLAN with a Limousin bull with its Limousin BREEDPLAN birth weight EBV, you would add 0 the Angus EBV and 6.4 to the Limousin EBV. This is further illustrated in Table 2 where average within breed EBVs have been converted to multi-breed EBVs by this method.

David Johnston

### Table 1 - MULTIBREED EBV ADJUSTMENT TABLE (March 2003).

<table>
<thead>
<tr>
<th>TRAITS</th>
<th>Gest. length</th>
<th>Birth Wt</th>
<th>200d Wt</th>
<th>400d Wt</th>
<th>600d Wt</th>
<th>Carcase Wt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angus</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Poll/Hereford</td>
<td>1.1</td>
<td>2.8</td>
<td>9</td>
<td>21</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Limousin</td>
<td>9.2</td>
<td>6.4</td>
<td>13</td>
<td>25</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td>Simmental</td>
<td>6.4</td>
<td>8.7</td>
<td>31</td>
<td>63</td>
<td>71</td>
<td>n/a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TRAITS</th>
<th>Gest. length</th>
<th>Birth Wt</th>
<th>200d Wt</th>
<th>400d Wt</th>
<th>600d Wt</th>
<th>Carcase Wt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angus</td>
<td>-1.3</td>
<td>+0.0</td>
<td>-1.3</td>
<td>+0.0</td>
<td>4.0</td>
<td>52</td>
</tr>
<tr>
<td>Poll/Hereford</td>
<td>0.0</td>
<td>+1.1</td>
<td>+1.1</td>
<td>+2.8</td>
<td>6.8</td>
<td>32</td>
</tr>
<tr>
<td>Limousin</td>
<td>-0.5</td>
<td>+9.2</td>
<td>+8.7</td>
<td>+6.4</td>
<td>7.7</td>
<td>19</td>
</tr>
<tr>
<td>Simmental</td>
<td>-0.3</td>
<td>+6.4</td>
<td>+6.1</td>
<td>+6.4</td>
<td>10.3</td>
<td>22</td>
</tr>
</tbody>
</table>

n/a - Insufficient data at present

http://breedplan.une.edu.au
Improving the female fertility EBVs

For a number of years BREEDPLAN has computed EBVs for the female fertility trait Days to Calving. To calculate this EBV we use the natural mating details and birth dates recorded by breeders every year. Cows which have been mated and don’t calve get a penalty so that their records get included in the analysis. However, for faster genetic progress we recommend the use of your best sires across herds via AI. The increasing use of AI in some breeds has led to a reduction in days to calving records thus decreasing the accuracy of EBVs for the cows themselves and for their sires.

AGBU scientists, led by Dorothy Robinson from NSW Agriculture, have recently investigated the possible use of AI data to estimate female fertility EBVs in Angus cattle. By carefully selecting quality AI data she was able to mimic days to calving from natural matings. Heifers and cows in an AI program were compared within a herd and season and Days to Calving calculated from the first AI date in the group, equivalent to bull in-date, to the calving date of the female. Non-calvers received a penalty days to calving record. This new trait was estimated to be lowly heritable 5-6%, which is similar to the natural mating days to calving.

The research also found that days to calving from AI as defined above is genetically well correlated (greater than 0.60) with days to calving from natural matings. If we can repeat such findings in other breeds we hope to soon expand the BREEDPLAN system to include days to calving from AI to increase the accuracy of EBVs of days to calving from natural matings. As we have tens of thousands of such records we expect a considerable improvement in the genetic evaluations of breeds with high levels of AI. However to get quality data breeders should consider the following in their recording procedures.

1. Record all AI date(s) of all cows and heifers in a year
2. If heat observation and joining is started at different dates for different groups of cows or heifers record this as management group
3. Record if the AI program was synchronised
4. Record if females are sold prior to calving and if this is due to not being in calf eg: after Preg. testing.
5. Record birth date of calves as accurate as possible.

David Johnston
(Another story from AGBU, Page 7)

IGF - I blood test to improve Net Feed Intake EBVs

During 2002 scientists from AGBU and NSW Agriculture investigated the potential use of Insulin Like Growth Factor 1 (IGF-I) in seedstock herds (See also BREEDPLAN News 02). Blood samples were collected from over 7,000 calves prior to or at weaning and analysed for IGF-I levels by Primegro Ltd. The collection of the samples was funded by MLA and Primegro Ltd, an Adelaide-based company, which has an exclusive licence to market the patented IGF-1 test, funded the analysis of the samples.

In pigs it has been shown that IGF-I is genetically correlated to some economically important production traits. Pigs with a genetic disposition for low IGF-I levels will grow slightly faster, are leaner, and have an improved feed efficiency. These correlations are strong enough to include IGF-I as a selection criterion in pig selection indices. Does this also hold in beef cattle?

An analysis on the first 1/3 of the data, which has been collected during 2002, shows that this might be true. Calves with the genetic potential for lower IGF-I values had relatives that grew faster, were leaner and had lower net feed intake. The sample however is still very small and we have to wait until the middle of 2003 to collect all growth and scan information on the 7000 + animals for which IGF-I was determined.

If the final results from this study are as good as the early ones then IGF-I will be used as a selection criteria to increase the accuracy of the Net Feed Intake (NFI) EBVs; however a separate EBV for IGF-I will not be published.

Hans Graser

MLA is co-funding these and other AGBU projects

Reg Woodgate, New South Wales Agriculture at Armidale has collected most of the 8,500 blood samples to date. The blood is collected on simple absorbent paper cards, shown above.

If breeders want to shortcut the development they could collect blood samples from their next weaners and have the sample cards stored and only analysed by Primegro once the final results from this study become available. This would give them a head start in the collection of data and earlier NFI EBVs with increased accuracies.

http://breedplan.une.edu.au