INTRODUCTION

This paper attempts to outline the views of some 500 WA Stud Merino Breeders on the status and future of Merino breeding in this State.

A great deal has been done over the past 10 - 15 years to break down the friction between practical sheep breeders and scientists that came to a head in the 1960's. As an industry, Merino breeders have attempted to move closer to and co-operate with scientists and researchers to tap the enormous potential that exists to improve Australia's Merino flocks. Our involvement in this conference and many others over the past 12 months, is welcomed by the Merino fraternity as an indication of even greater future co-operation.

Whereas some progress has been made in gaining stud support for tangible research projects I believe we have yet to identify the joint research objectives capable of getting either, or both sides excited. This may be partly due to the fact that key researchers still appear to have difficulty in acknowledging that the stud industry continues to be successful because of its highly competitive and heavy commercial orientation.

Instead of questioning why a stud breeder does not use more objective measurement; why he shows resistance to twinning research; or, why he is not switched on by "supersheep" discoveries, blackboard breeding equations or exotic sheep imports, perhaps the approach should be to discover why he is successful.

In most cases the breeder has read the market signals in advance and has prepared his enterprise accordingly. The commercial breeders who back their market judgement and are satisfied with the progress of their stud, inevitably stay with him and as the performance of their own flocks improve, are happy to pay more for higher grades.

The fact of the matter is that relatively few commercial flock owners are yet close to expressing the full genetic potential of the stud stock they are able to purchase. The fundamental objective therefore
should perhaps still be to shorten the commercial/stud gap by concentrating on husbandry techniques, and of course nutrition. Significant success in this area would automatically put the stud Merino industry - and researchers - on a short fuse to achieve faster genetic gain.

We have seen with artificial breeding, sire referencing, and the increasing use of some aspects of measurement and technology, that stud breeders do respond to innovation. But unless he can see obvious, ultimate advantage in a new idea in terms of its potential to increase demand for the end product, it is unlikely that there will be any overwhelming response.

SOME INDUSTRY TRENDS

It can be seen from Table 1 that since 1960 the WA Stud Industry has more than doubled its ram sales whereas NSW, the biggest seller in 1960 dropped by more than 20 percent and other states varied only marginally.

Table 1. Size of the Stud Merino sheep flock and number of rams sold by States.

<table>
<thead>
<tr>
<th>Year</th>
<th>Rams</th>
<th>Sheep</th>
<th>Rams</th>
<th>Sheep</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960</td>
<td></td>
<td></td>
<td>1985</td>
<td></td>
</tr>
<tr>
<td>NSW</td>
<td>104,577</td>
<td>1,305,217</td>
<td>75,107</td>
<td>865,309</td>
</tr>
<tr>
<td>QLD</td>
<td>26,083</td>
<td>336,617</td>
<td>16,413</td>
<td>239,439</td>
</tr>
<tr>
<td>SA</td>
<td>31,326</td>
<td>273,708</td>
<td>43,609</td>
<td>473,480</td>
</tr>
<tr>
<td>VIC</td>
<td>9,133</td>
<td>104,231</td>
<td>11,688</td>
<td>173,652</td>
</tr>
<tr>
<td>WA</td>
<td>25,653</td>
<td>350,806</td>
<td>60,258</td>
<td>748,821</td>
</tr>
<tr>
<td>TAS</td>
<td>NA</td>
<td>NA</td>
<td>922</td>
<td>14,659</td>
</tr>
<tr>
<td>AUSTRALIA</td>
<td>196,752</td>
<td>2,370,579</td>
<td>207,977</td>
<td>2,515,360</td>
</tr>
</tbody>
</table>

Table 2 shows that with the basic WA flock ram requirement of 2.5 percent we can deduce that 300,000 Merino rams are put to work in WA flocks each year. Given that the average working life of a ram is four years, the annual ram replacement required in WA is 75,000.

WA Merino studs in fact supply well over 60,000 of these rams, or more than 80 percent of the requirement. That leaves approximately 15,000 rams to be supplied from AMS and home bred sources.

It should also be pointed out that many home breeders buy sires from studs to breed their own flock rams and that these probably account for a sizeable proportion of the 15,000 ram balance.

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Table 2. Some WA sheep statistics for 1985-86 season.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lambs Marked (000)</td>
<td>8,990.4</td>
</tr>
<tr>
<td>Ewes Mated (000)</td>
<td>13,489.3</td>
</tr>
<tr>
<td>Marking Percentage (%)</td>
<td>79.1</td>
</tr>
<tr>
<td>Ewes mated: (000)</td>
<td></td>
</tr>
<tr>
<td>to Merino</td>
<td>11,972.6</td>
</tr>
<tr>
<td>to Corriedale &amp; Polwarth</td>
<td>327.5</td>
</tr>
<tr>
<td>to Short-wool breeds</td>
<td>1,324.4</td>
</tr>
<tr>
<td>to Long-wool breeds</td>
<td>319.3</td>
</tr>
</tbody>
</table>

On the basis of these figures and from the commercial breeder response to a market survey conducted by the Stud Merino Breeders Association of WA early in 1986, the stud industry will hold, and possibly increase its 80 percent plus share of the market in the foreseeable future.

Table 3 shows the various strains of Merino important in Australia today. In WA, the predominant strain is Collinsville blood with about 30% of the state's Merinos. These are influenced by a traditional parent stud, Collinsville in South Australia, several Western Australian and South Australian daughter studs and many general studs serviced by these daughter studs. The remainder would comprise 30% Poll studs which would mainly come under the 'general' stud classification, as with Poll studs there doesn't seem to be as traditional an approach to bloodlines.

Table 3. Proportions of Merino Studs of various bloodlines or strains in WA.

<table>
<thead>
<tr>
<th>Strain</th>
<th>Horned</th>
<th>Polled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peppin</td>
<td>20</td>
<td>4</td>
</tr>
<tr>
<td>Collinsville</td>
<td>29</td>
<td>8</td>
</tr>
<tr>
<td>Bungaree</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Collinsville/Peppin</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Collinsville/Bungaree</td>
<td>7</td>
<td>20</td>
</tr>
<tr>
<td>General Blend</td>
<td>14</td>
<td>44</td>
</tr>
</tbody>
</table>

During the last 10 years a restructuring of the traditional parent daughter stud system and a trend to mixing bloodlines to breed a more suitable WA type has taken place. With horned Merinos, an injection of Peppin blood back into Collinsville blood flocks has been common as has a heavy injection of Collinsville and a smaller amount of Peppin blood into previously Bungaree flocks.

There are several reasons for the formentioned mixing of bloodlines, these are:

1) A general demand for a similar type in WA, bigger bodies and consensus for a 20 - 23 micron range to suit most areas of the state.
Many breeders used an outcross to another strain to breed the WA type.

2) Adoption of technology to use better sires more widely with AI, sharing sires and frozen semen, making experimentation or progeny evaluation easier and cheaper.

3) A narrowing of the quality gap between larger, older studs and smaller newer studs meant that parent studs often did not hold a quality advantage, the traditional reason for their being a parent stud.

4) Successful mixing of bloodlines by a few studs has encouraged others to do the same.

5) A failure by some long established parent and daughter studs to keep pace with changing demand and quality level.

6) The development of Poll Merinos. Due to lack of numbers of parent studs as compared to horn Merinos, there was far less adherence to bloodlines in developing polias, rather more a type factor, so most poll studs would be classified as general.

**THE FUTURE**

Economies or market values for relative traits determine trends in selection and so during the last 10 years breeders have concentrated on size due to the shipper wether market.

Currently the shipper market has steadied, prices are not rising and the Eastern States have drawn on the previously WA dominated market and I guess most breeders have achieved a reasonable size and have tended to concentrate once again on wool. The wool market is firm, future predictions are reasonable and there is plenty of room for improvement in wool weight and quality. How much we can improve genetically and get a worthwhile response given the environment and management restrictions is another question.

Breeders will sacrifice some size to pick up more wool now. Future trends will be determined by factors in the meat and wool markets and the allied industries, wheat and coarse grains.

Fertility is a factor not currently high in priorities as a self replacing flock situation with accent on wool is satisfied by 80 – 100% lambings which are achievable with reasonable management and at reasonable cost. To go for 120 – 150% marked lambs (achievable with our Merinos now) but needing much higher inputs in the husbandry and nutrition areas is just not attractive or viable at present.

The following points are likely to express the general views of ram breeders and will have a bearing on the direction stud ram breeders will take in future.

1) Increasing wool weight is not a problem as a single factor, but increasing wool weight of an acceptable and profitable wool, whilst
retaining body size and weight is extremely difficult. To include the common faults and weaknesses in body conformation, soundness and fitness (in themselves not a problem in minor degrees or early stages, but when accumulating over several generations become serious) makes the breeder's task formidable.

2) Increasing wool weight for a large section of wool producers (eg pastoral and low rainfall zones), where nutrition levels are erratic and below the level needed for sheep capable of high production levels, is a waste of time and money. An average wool cut and easy care of the required micron for the situation is adequate. The ability to survive, fatten quickly and breed are the key factors and too much capacity to produce wool lowers the capacity to cater for these characteristics.

3) Increasing bodyweight in itself is no problem but the bigger and heavier the sheep becomes the more difficulty it has in maintaining wool quality, wool weight and fertility. They tend to be too dry or undernourished in the wool and shorter stapled or less dense and the ewes tend to not have as high a fertility level, when extremely big.

4) Wool qualities - the industry demands and stud ram breeders respond to the demand for high quality wool. The factors involved are:

- handle or softness,
- crimp definition,
- lock - staple formations,
- nourishment - balance of suint and wax,
- evenness of fibre diameter over body, and,
- colour.

Broadly speaking, good quality is taken as a wool that will yield well and resist damage from weather or environmental situations, eg fleece rot and dust penetration, and perform to processing requirements of the particular micron range. This is an area that is subject to much confusion between actual genetic influence and management and environmental influence. (Time of shearing, wet year against dry year effect, heavy stocking versus light stocking etc.). Each variation can effect differing wools from the same sheep.

MEASUREMENT AIDS

Most studs in WA use fleece measurement as an aid. However many are concerned about low repeatability of initial test rankings in 12 month old rams. Work on this problem has been commenced by ABRI. Stud breeders have been measuring long enough to accept the extreme seasonal and age variations and tests over short periods but the commercial flock breeder has not yet had time to become fully familiar with them. The flock man knows what his own wool clip micron and yield is in comparison to other flocks in broad averages. What he cannot do is compare 'equally' clean fleece weight or micron or whatever characters he chooses with other flocks.

The problem is how to present measurement data in a standard and meaningful way at point of sale. The Association recommended using
deviations from the mean for micron and yield and grouping in broad spans for clean fleece weight and bodyweight. A problem that arises here is that usually say 150 rams are offered at a stud auction, which are probably the top 30% of the stud ram drop. Measurements are displayed ranking or grouping them in some form. The lower graded ones are psychologically branded inferior (even though they are in the top 30%) having had a figure attached to say they are the lowest in that sale, whereas without a figure even though they are still lowest, prospective purchases are less inhibited.

One current problem is that commercial breeders are over-stressing micron to the detriment of weight, possibly because one is more easily identified, priced and believed to be easily controlled. We get paid for micron variations from season to season and it is thus very visible. It is not so visible for weight variations and the relationship between micron and weight and their effect on returns.

Woolplan and index selection may be suggested to simplify and overcome the formentioned problems. Woolplan needs much extension and perhaps changes in presentation to be accepted, eg variable indices to suit different combinations of characters for different management or environmental situations.

SIRE REFERENCING

The pilot scheme has the potential to provide studs with:

1) A reference facility to, from time to time, check comparative production with other studs;

2) a means of identifying sires excelling in overall or particular characteristics;

3) a means of certifying sires for production levels for establishing credibility for semen sales and progeny sales.

The principle of sire referencing and its application to the Merino industry has not yet been fully accepted or understood by the industry generally. The next two years of the pilot scheme are critical in achieving first acceptance in principle and then enough support for continuation.

ARTIFICIAL BREEDING

AI with fresh semen and laproscopic insemination with frozen semen will increase steadily providing the wool industry maintains current profitability. Frozen semen in particular would be used more extensively if costs could be lowered by cervical insemination for example instead of intrauterine with a laproscope and accompanying overheads. More research is needed in this area.

Due to the physical nature and the short life of the sheep, faster generation turnover, and the much larger numbers in flocks as compared to cattle, a significant move to embryo transfer has not yet occurred.
Some studs have initiated this work but rapid adoption in the Merino industry, in the short term at least, is not likely. Breeders generally are not used to, nor consider it important to double pedigree Merinos, and without female lines pedigrees embryo transfer becomes less attractive.

\textbf{SUMMARY}

The stud Merino industry is a service industry responsible to demands of the sheep and wool industry generally but responsible to lead in change in type and performance of the Merino.

The stud industry is extremely competitive within itself and sensitive to challenges from outside, (for example, alternate breeding systems such as the AMS) or to criticism from other bodies, be they scientific or industrial.

The industry acknowledges and appreciates the wealth of knowledge that has come from science and research into the production of wool and the Merino sheep over the last 30 years. The management option now available in the areas of nutrition, health, fertility, and over all knowledge of the Merino have made the wool industry able to withstand the vagaries of our economy to this point of time.

However it is felt that no significant genetic improvement on production characteristics of the Australian Merino in the last 50 years can be attributed to sources other than within the industry itself. Indeed it's probably difficult to those not having been closely involved with the stud industry over many years to have a positive feeling about any improvement, given the complex nature of attempting comparisons of Merinos in say 1950 and 1986.

Some possible explanations for this are:-

1) The Merino is a dual purpose sheep- it is valuable for both meat and wool. It is selected for both in a wide variety of environments and for different types of wool and wool/body combinations, there is not a standard set of criteria used in selection.

2) The characteristics of value cannot be all measured precisely and those that are precise have to be qualified by fairly low heritabilities, repeatabilities, and negative correlations in key production characters.

3) Without the necessary precision available it has not been possible to utilise modern population genetics as has been done in other species such as poultry, pigs or cattle where selection characters are fewer and more precisely measured.

Experienced Merino breeders generally consider their own eyeball appraisals as accurate and much quicker to apply than mechanical aids, although some have improved their accuracy by utilizing mechanical aids eg scales, at some time. In conjunction with eye appraisal, the last 20 years have as mentioned earlier seen a ready adoption of fleece
measurement services as a selection aid.

The availability of a wider range of cheaper wool sample tests and their adoption to commercial Merino breeding at lower cost may help, qualified by positive confirmation of the commercial worth of measuring the wide range of characteristics.

Progeny testing or evaluation in some form has always been part of the breeder's system and the development of the Sire Referencing Scheme may perhaps be the most significant aid that the industry has received for many decades. It could provide a yardstick accessible to all breeders to assess their own performances at a reasonable cost for whatever characteristics concern them in their own flocks.

Care must be taken to use stud industry appraisal of characters important to the industry as well as standard objective measurements.