SHEEP BREEDING AND SELECTION – TARGETING THE AUDIENCE

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SUMMARY
Market research has shown that across flock breeding values and bloodline analyses will not be fully utilised by merino breeders (commercial and stud) because nearly 80\% believe that the environment may cause re-ranking of fleece weight and fibre diameter. This research identified six market segments differentiated by their beliefs on sheep breeding. A project called “Merinos to Match” was developed to provide genetic evaluations on stud choice within the different belief systems. This approach attracted participation that included studs that had not previously participated in other benchmarking trials and the interest from commercial breeders covered all segments of the market. Changing studs, as a result of the project, was limited by the lack of differences in performance between some studs.

INTRODUCTION
The wool industry has a high uptake of objective measurements; more than 90 per cent of Merino breeders use objective measurement of some traits; but the use of these measurements in breeding programs based on quantitative genetics is low (Welsman 2000). In an effort to better understand the reason for the low adoption of quantitative genetics and to therefore more effectively target extension programs, a market research study was conducted in Victoria in 1999 on the breeding decisions of wool producers. The research segmented the market into six groups, differentiated by the beliefs that affect the way decisions are made in the purchasing of rams.

In brief, the results indicated that 78\% of wool producers believe that the impact of the environment on fleece weight and fibre diameter is such that animals may re-rank for these traits in different environments. Of those that believe that re-ranking can occur, 50\% believe that there are sheep that will perform well in different environments and they use a range of strategies to identify those sheep. Thirty to forty percent of all producers believe that assessment of skin and wool traits are better indicators of productive sheep than direct measures of fleece weight and fibre diameter. The results are outlined in more detail in the report (Kaine and Niall 2000).

These results indicate that many woolgrowers are restricted in the range of bloodlines and sires that they will consider due to the perception that genetic by environment interactions affect the relative productivity of different bloodlines and rams. So long as this perception is held there will be little increase in the acceptance of results from practices such as performance recording, stud comparisons and centralised sire evaluation schemes that utilise linkage across environments. This paper outlines a project developed to address producer beliefs and its success in reaching the target audience.
MATERIALS AND METHODS

The recommendations from this research were to either try to change beliefs or to assist in the decision making within the context of current beliefs. Changing beliefs is difficult as these beliefs have been built from experience over time and so requires changing their experiences, which takes time. Therefore, we developed a project which would, in the short term, assist woolgrowers in each segment to improve their breeding decisions within the context of their beliefs.

As the impact of the environment and the breeding strategy are so important in the purchase of rams for genetic improvement, the choice of ram source, or stud, is a major and risky decision for Merino ram buyers. Hence a project was developed to increase the options of using more productive studs, but within the context of the beliefs and breeding strategies of the six segments. Simply, this project was a number of wether trials, designed to evaluate studs in different environments. The protocol for evaluating bloodlines was developed with the Victorian Stud Merino Sheepbreeders Association. The project was called “Merinos to Match – the right sheep for your environment”.

To ensure that the stud comparisons were relevant to producers, local site committees were formed and they selected and invited studs of relevance.

The design of the project was multi tiered in its approach to supply relevant information to the six segments identified in the market research. Segments 5 and 6 (29%) believe that the environment will cause re-ranking of some traits and that sheep can not be bred to do well in a number of environments. They are therefore limited to current sources and knowledge of the performance of others in the same environment. To address this, stud comparisons were run as four distinct sites in Victoria, dependant on demand. This assisted these wool growers by giving them the opportunity to evaluate studs in local conditions under comparable management conditions and for traits of use to them.

Segments 3 and 4 (39%) also believe that the environment will cause re-ranking of some traits, but that some sheep perform well in a number of environments. They identify these sheep either by certain traits (eg skin quality) and/or observation of performance in a number of environments. To address this and increase the options to them, each site was required to have at least one stud in common with another site. This allowed producers to see some studs perform in different environments as well as in the environments relevant to them.

Segments 1 and 2 (22%) do not believe that the environment causes re-ranking of fibre diameter and fleece weight. To improve their options, all sites were linked which enabled a comparison of 29 studs in total, many not benchmarked before. This therefore increased the amount of information and hence choice available to these producers.

Segments 1, 3 and 5 were similar in their beliefs that fleece weight and fibre diameter are not the best measures of a productive sheep and are interested in fleece characteristics that reflect skin traits such as handle, crimp and staple structure. To cater for this, sheep were penned in teams before shearing so that they could be inspected for traits relevant to them. The focus of field days was therefore inspection of the sheep. Results for each site were sent out and available on a website after each shearing.

The long term strategy was to attempt to change beliefs by increasing the number of sites over time and so enable producers to ‘experience’ for themselves, that no re-ranking occurred between environments, but funding prohibited this occurring.
RESULTS AND DISCUSSION
Four trial sites evaluated twenty-nine studs. Of these, many had not been involved in benchmarking through wether trials or sire evaluations previously and so this was gauged as a success in attracting a wider range of studs relevant to wool producers.

Each site collected data on fleece weight, fibre measurements, fleece rot and bodyweight for two shearings. Fleeces were assessed for greasy colour and style using the AWEX scoring system. Fat and eye muscle depth was measured in the first year as was crimpm frequency. The data was analysed using ASREML software (Gilmour et al, 2000) and the average standard error of differences for each trait was provided as a measure of ‘real’ differences between studs. The across site analysis model included fixed effects of site, age at first shearing and birth month. Taking these factors into consideration had the impact of reducing the size of some of the differences between studs. Three breeding indexes were estimated for each stud in the across site analysis using relative economic values, to identify financial advantages from changing stud source, for different breeding objectives. These indexes used relative economic values used by Sheep Genetics Australia (SGA) in the indexes they provide to merino ram clients (Kevin Atkins, pers. comm.). The range between best and worst studs for a particular breeding objective was between $2.60 to $3.41/Dry Sheep Equivalent (DSE)/year. A description of the methods used and these results are in the final report (Court et al. 2006). Whilst these differences can yield large returns when extrapolated to large numbers of ewes, this is approximately a quarter of the differences reported in the NSW bloodline analyses, (Atkins et al. 2005) acknowledging a narrower range of merino types and different economic analysis. Whilst there are real differences between some studs, there are many studs with little difference and so potential improvement from genetics for some producers should focus on sire selection.

Reaching the Target Audience. The trial design was specifically developed to attract interest from all wool producers by addressing the beliefs, which segmented this audience into six groups. As a simple guide as to whether this was achieved, 47 producers interested in the “Merinos to Match” project were identified as being involved in the market interview process, and so could be segmented. Interest was assessed by being on our database, as this included everyone who requested to receive results. The break down of the segments they were in is presented in Table 1.

Table 1. Representation of segments in a sub-sample of the “Merinos to Match” database

<table>
<thead>
<tr>
<th>Segment</th>
<th>Numbers of producers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Segment 1</td>
<td>8</td>
</tr>
<tr>
<td>Segment 2</td>
<td>11</td>
</tr>
<tr>
<td>Segment 3</td>
<td>4</td>
</tr>
<tr>
<td>Segment 4</td>
<td>5</td>
</tr>
<tr>
<td>Segment 5</td>
<td>10</td>
</tr>
<tr>
<td>Segment 6</td>
<td>9</td>
</tr>
</tbody>
</table>

Although this represents a small sub-sample, the spread of representation supports the claim that this trial attracted producers across all segments.

Before completion of the trials in 2005, a one-page survey was sent to everyone on the “Merinos to Match” database to gauge the usefulness of the information provided. Forty percent (154) responded. Table 2 shows the response to whether the project gave them more confidence to buy rams. Some did not answer the question, predominantly these were studbreeders. Seventy two percent of respondents said it did give them more confidence, mainly from information in the reports.
Posters

(84 respondents) and from viewing the sheep (62 respondents). Only 30% of all respondents thought
the across site analysis would be useful when available, which supports the market research results..

Table 2. Did “Merinos to Match” give more confidence on where to buy rams?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>(number of responses)</td>
<td>(number of responses)</td>
</tr>
<tr>
<td>Gave more confidence</td>
<td>112</td>
</tr>
<tr>
<td>If yes, which information in particular:</td>
<td></td>
</tr>
<tr>
<td>Site reports</td>
<td>84</td>
</tr>
<tr>
<td>Viewing sheep</td>
<td>62</td>
</tr>
<tr>
<td>Across site comparison</td>
<td>47</td>
</tr>
</tbody>
</table>

Of those who commented as to why the project did not give them more confidence, the main
reasons were that there was not much difference between studs; it showed them they were on the
right track or that the environment was bigger than genetics. The inference therefore is that the
project was useful to all of the market, but changing ram source was limited by the lack of differences
between some studs.

CONCLUSIONS
The “Merinos to Match” project was designed to be useful to all Victorian wool producers by
providing them with information that fitted within their belief systems. Results indicate that this did
attract the full spectrum of producers and provide them with useful and valid information on ram
sources. The lack of differences between some studs reduced the potential for change by many
producers. Developing strategies to fit within beliefs, rather than attempting to change beliefs in the
short term, was successful in attracting a wide audience who was receptive to adopting change if
potential was identified. In the long term these beliefs need to be broken down to achieve maximum
uptake of genetic information without the expense of these replicated trials.

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