EVALUATION OF AUSTRALIAN MERINO RAMS IN CHINA

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INTRODUCTION

Several Merino strains have evolved in China, and their development has been largely influenced by importations from Russia and to a lesser extent from Australia (Cheng 1984). Average wool cuts in the Australian sheep population are around three times those in China, but large environmental differences make it difficult to draw firm conclusions as to possible genetic differences between Merinos in the two countries.

This paper reports some preliminary results of an evaluation of crossbred progeny of Australian Merino rams in China where their performance has been compared with that of purebred Chinese stock.

MATERIALS AND METHODS

Rams

Six Australian Merino sires were progeny-tested against five Chinese Merino (formerly called Xinjiang Finewool) rams in flocks of Chinese Merino ewes. The Australian Merino rams came from six leading Western Australian studs. Although there is little objective information available for the rams, their on-farm value was estimated by the breeders to be $500 to $1000 each. The Chinese Merino rams represented a cross-section of those used for artificial insemination on the Nanshan Stud Farm in 1984. The Xinjiang Fine-wool breed was initially developed from crossing indigenous Kazakh sheep with Caucasian Merinos and subsequent selection (Dao 1982). Some Australian rams have also been used.

Environment

The comparison was conducted at Nanshan Stud Farm in Xinjiang Autonomous Region in north-west China. The farm is 1500-3000 metres above sea level with an annual average rainfall of about 500mm. Winters are cold (down to minus 30°C) and summers warm to hot (above 30°C). The average temperature in 1984 was 2.2°C. Pasture is green from May to October and dry for the remainder. The sheep are managed in small flocks on unfenced pastures by herdsmen and during each year are moved several hundred kilometres between seasonal grazing areas.
Experimental Design

The evaluation was carried out over nine household flocks and consisted of two separate comparisons: one with three Australian versus three Chinese rams and a second with three Australian versus two Chinese rams. The first comparison was carried out in five of the nine flocks and the second in the remaining four. Ewes in each household flock were randomly allocated to either Australian or Chinese Merino rams. The progeny remained in these household flocks until weaning. After weaning, progeny were reallocated by sex to six management flocks. Thus sex effects were confounded with post weaning management flock.

Measurements

A total of 265 entire male and 300 female progeny were measured, though not all measurements were taken on all progeny. In all there were 225 purebred Chinese Merinos and 348 crossbred Australian x Chinese Merinos.

Liveweight, staple length and greasy fleece weights were recorded on 14-month-old progeny at their first shearing in June 1986. Mid-side samples from each fleece were removed for laboratory analysis.

Sources of variation were estimated by least squares analysis of variance. The final model included fixed effects of sire's country of origin, household flock, post-weaning management flock and birth-date; and the random effect of sire. Household flock effects were estimated by fitting separate comparisons which coincided with the mating design. Sires were tested within country of origin and least squares means were estimated for sires' country of origin (Australia or China). The effects of birth rank and dam age were fitted in initial models, but were omitted as they were not significant.

RESULTS AND DISCUSSION

The effects of sires country of origin are shown in Table 1.

Table 1. Least squares means and standard errors of progeny of Australian Merino rams and Chinese Merino rams for greasy fleece weight, staple length and body weight.

<table>
<thead>
<tr>
<th>Sire's Country of Origin</th>
<th>Greasy Fleece Weight (kg)</th>
<th>Staple Length (cm)</th>
<th>Body Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>4.15 (0.09)</td>
<td>8.05 (0.11)</td>
<td>32.8 (0.4)</td>
</tr>
<tr>
<td>China</td>
<td>4.02 (0.16)</td>
<td>7.97 (0.11)</td>
<td>33.4 (0.4)</td>
</tr>
<tr>
<td>Significance</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>% Difference*</td>
<td>3.23</td>
<td>1.00</td>
<td>-1.8</td>
</tr>
</tbody>
</table>

* Expressed as a percentage of purebred Chinese Merino.
The crossbred progeny of Australian rams had higher greasy fleece weights and longer staples than the purebred Chinese Merinos, but lower liveweights. However none of these differences were significant at the 5% level.

While the differences between the progeny of Australian and Chinese Merino rams were small for the traits reported, a full interpretation of this study must await information on clean fleece weight and wool quality traits.

The number of rams used in this study was small and the sampling procedure for their selection poorly defined. Nevertheless, although neither group of sires can be considered a random sample, it is likely that the selection applied to both groups was similar in magnitude and not a serious source of bias. Attempts are currently underway to progeny test larger numbers of Australian rams in China to obtain a more reliable estimate of genetic differences between the two populations.

The magnitude of fleece weights and body weights reflect the severity of the conditions in which the animals are run. The loss in body weight from using Australian Merino rams under such conditions, although only small, is seen as a disadvantage by the local Chinese herdsmen, who place a high value on mutton.

ACKNOWLEDGEMENTS

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REFERENCES
