TAKING FIBRE DIAMETER INTO ACCOUNT IN RAM SELECTION

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The value of a fleece, free from major wool faults, is primarily a function of its weight of clean wool and average fibre diameter. A logical objective in a wool breeding enterprise is to maximise genetic gains in fleece value. An effective way to do this is to select rams on relative fleece value. Where a mid-side wool sample has been tested from each ram for fibre diameter and yield, rams can be ranked for fleece value by adjusting their clean fleece weight (CFW) for the deviation of their fibre diameter from the flock average. Rams finer than average would have their CFW increased and those stronger than average would have it decreased.

The appropriate adjustment rate depends on an estimate of the future relationship between price and fibre diameter. Mean annual wool prices paid at Australian auctions from 1969/70 to 1977/78 were analysed by fibre diameter classification. When averaged over these nine seasons for Merino wools in the 19 to 24 mμ range, the price was just over 5% per micron finer. The Wool Corporation's reserve price for 1978/79 gives a premium of only half this amount but if averaged over the five seasons ending 1978/79 the reserve price gives an advantage of 4.0% per micron finer in the 19 to 24 mμ range. An adjustment rate of 4 or 5% per micron appears reasonable but breeders can do their own crystal ball gazing to choose a rate.

Alternatively, a breeder may wish to maximise rate of genetic gain in CFW while holding fibre diameter constant. The most efficient way to do this is to select on CFW after it has been adjusted for fibre diameter. The appropriate adjustment rate depends on the heritabilities of the two characters and on their phenotypic and genetic correlations, rather than on the relationship between fibre diameter and price.

The heritabilities of CFW and fibre diameter are very similar and the genetic and phenotypic correlations are almost equal which means it is reasonable to assume that fibre diameter will not respond in a breeding program in which rams are selected on CFW which has been adjusted for the phenotypic regression of CFW on fibre diameter.

To gain some knowledge of the size of correction factors required to adjust CFW so that the adjusted weight is not correlated with fibre diameter a number of flocks were analysed from records kept at the Flock Testing Service of the University of New South Wales. Some 3,000 records were analysed from 5 flocks from which little culling had been done prior to collection of mid-side samples. Expressed as a percentage of flock mean clean fleece weight, the adjustment required per micron deviation, averaged over all flocks, was 3.2%; but varied among flocks from near zero to 5.1% suggesting a separate adjustment rate should be determined for each flock.

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With the availability of modern computing facilities at wool testing laboratories individual clean fleece weights could be adjusted for fibre diameter as outlined above and included in flock reports at negligible cost.

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SHOULD WE BE BREEDING SHEEP THAT ARE EASIER TO SHEAR?

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In recent years producers have shown increasing interest in reducing production costs, especially in those management operations with a high labour component. We have examined some factors which affect the time required to shear sheep (TRS).

Two sets of observations have been made on TRS. The first involved 98 rams and 75 ewes from the one medium Peppin blood-line. The second involved a total of 79 rams and 143 ewes from five blood-lines.

A breeding program to reduce TRS could most easily be implemented by selecting on production characters which are correlated with TRS. In our observations the characters most strongly correlated with TRS were greasy fleece weight, the degree of skin fold, and to a lesser extent, face cover and bodyweight.

In the second set of observations there were significant differences between the blood-lines in TRS, with averages for ewes varying from 157 seconds to 205 seconds. Skin fold development was the most important character associated with these blood-line differences, with greasy fleece weight and face cover also having an effect.

Reducing TRS would not lower direct shearing charges, but would lower other shed labour charges. Our estimate of the total savings are .25 cents/second reduction in TRS/sheep shorn.

The importance of TRS as a breeding goal was examined relative to the importance of greasy fleece weight. Using a range of likely values for each character, and estimates of the coefficient of variation and heritability of TRS of 15 per cent and 0.4 respectively, greasy fleece weight is of the order of 10 times as important as TRS as a breeding goal. Similarly TRS contributes very little to the aggregate genotype for economic merit.

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