THE EFFICIENCY OF VISUAL CLASSING OF MERINO SHEEP FOR WOOL PRODUCTION

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In the 1950's a number of assessments of the efficiency of visual selection as a method of increasing fleece weight were made. Most showed visual classing to be in the order of 30-40% efficient in selection for clean fleece weight.

Four classers working in two pairs (C1 and C2) were tested with 373 ewes of 4 strains. The classers were familiar with relevant research findings and had regular experience in classing sheep.

Within each strain the classers graded sheep into 9 grades on the basis of clean fleece weight. Following shearing, records were taken of:
G, greasy and W, clean wool weight; Y, yield; D, fibre diameter; B, body weight; Wr, skin wrinkle score; L, staple length and Cr, crimps per cm.

The means and standard deviations of all measurements and the correlations between them were calculated within strains.

The phenotypic relationships were within ranges previously published for Merino sheep.

TABLE 1: Pooled within strain correlation coefficients between classer grades and measured traits.

	C2	B	G	W	Wr	Y	L	Cr	D
C1	0.66	0.59	0.65	0.71	0.06	0.23	0.49	-0.27	0.13
C2	-	0.62	0.47	0.57	-0.13	0.26	0.47	-0.25	0.12
B	-	-	0.62	0.58	0.05	-0.02	0.22	-0.12	0.01
G	-	0.62	-	0.89	0.40	-0.12	0.26	-0.17	0.06
W	-	0.58	0.89	-	0.22	0.33	0.45	-0.29	0.05

Standard errors for these correlations are between 0.02 and 0.05

The efficiency of visual classing is proportional to the correlation coefficient between the classer score and the desired trait, clean fleece weight.

C1 showed an efficiency of 0.71 (range of 0.57 - 0.78 for the four strains) and C2 an efficiency of 0.57 (0.54 - 0.62). Their efficiency is far higher than previous published estimates.

Estimates of genetic correlations in Merino sheep, in the characteristics studied, have shown similar sign and magnitude as the phenotypic correlations. If these correlations are similar in these sheep, flocks selected by either C1 or C2 may have become marginally less wrinkled than flocks selected on the

basis of fleece weight alone. Otherwise selection would have similar effects of raising body weight, yield, staple length, lowering crimp rate and having little effect on fibre diameter.

Our calculations show that if a fleece weight selection program was implemented, holding wrinkle constant, visual selection by Cl would be 85% as efficient as the measurement program.

It is concluded that visual classing for fleece weight can be a valuable procedure for preliminary culling to reduce the numbers that need to be measured. In many instances, such as culling flock ewes, measurement may not pay if an efficient classer is available.

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THE VALUE OF FLEECE MEASUREMENT IN MERINO BREEDING PROGRAMS

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Traditionally, sheep classers have made the selection decisions in studs which have influenced genetic progress in production characters both in the stud itself and in commercial flocks the stud supplies with rams.

The major genetic impact is through the selection of stud sires. This is usually achieved in two steps. Between 10 and 15 percent of rams are first selected visually and designated as reserve rams. The sires are selected solely from among these reserve rams, often at some later age. Where studs use fleece measurement services it is usually only the reserve rams which are tested.

Genetic progress made in the stud is passed on to all commercial flocks the stud supplies with rams. If the stud is making genetic progress in a character such as fleece weight then the average difference in genetic merit between the stud and these commercial flocks is equal to the genetic progress made in two generations of selection in the stud. This lag will be reduced if the flock rams sold by the stud have a higher average fleece weight than the drop average.

Flocks buying rams from the same stud will vary in genetic merit. The relative merit of such flocks for fleece weight will depend mainly on whether they buy flock rams which are above or below the stud average. In most situations producers are not able to buy rams with the aid of production information, but have to rely on the classer to put the heavier cutting rams into the higher-priced grades.

Recent research (McGuirk, Scott and Rose, unpublished) has shown a clear separation between reserves, flock rams and visual cull grades on fleece weight. The average performance of these grades for fleece weight in six drops of rams, drawn from two studs were 115, 99 and 90 percent respectively of the flocks average greasy fleece weight. Estimates of the emphasis given