ACCURACY OF SELECTION OF MERINO SHEEP BY VISUAL APPRAISAL

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SUMMARY

Of 187 stud-masters, sheep classers, commercial woolgrowers and sheep and wool advisory officers in the Queensland Department of Agriculture and Stock, who classed a small flock of sheep by visual appraisal, 8 per cent. secured at least 75 per cent. of the available selection differential for fleece value. Men who demonstrated the repeatability of their skills for the selection of sheep by visual appraisal achieved greater selection differentials by using fleece measurement as an aid to selection.

I. INTRODUCTION

Numerous workers have emphasized the value of fleece measurement as an aid to the selection of apparel wool sheep on the grounds that the combination of visual appraisal and measurement greatly increases accuracy of selection. The evidence upon which this argument is based is well documented, but it is slender in that published information is available on the work of comparatively few sheep classers (Morley 1955; Moule and Miller 1956; Riches and Turner 1955).

Each classer attempts to select the sheep he thinks are best suited to the environments that they have to use. His standards may vary with the quality of the flock, the incidence of faults, the amount of selection pressure at his disposal, and whether this is to be used positively (i.e. in selecting for certain characters) or negatively (i.e. in selecting against faults).

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The observations reported here were made in Queensland on the work of 187 stud-masters, professional sheep classers, commercial woolgrowers and sheep and wool advisory officers in the Queensland Department of Agriculture and Stock who agreed to participate in the selection of Merino sheep.

II. MATERIALS AND METHODS

The participants were drawn together on six different properties in groups comprising between 20 and 35 men who were asked to select, from flocks of between 25 and 35 full-woolled animals, the best 5 sheep on the basis of commercial return as wool producers. Owing to rain the choice was reduced to 2 sheep from 14 on one property. After the selections had been made the commercial return of each animal was estimated by shearing, weighing the fleeces, and typing them subjectively according to the A.W.R.C. standards (Anon. 1954). The percentage yield was determined from a midside sample from each fleece, and clean scoured weights were calculated. The ruling prices of the different types of wool were obtained from a woolbroker, and the cash value of each fleece was computed.

The participants were also asked to cull the five sheep that they considered to be the worst in four of the flocks; no suggestions were made about the criteria that might be used in culling these sheep.

An opportunity also occurred to study the repeatability of the performance of three men, each of whom participated in the selection of sheep on a number of different properties.

The selection differentials for greasy fleece weight, clean fleece weight, mean value (pence/lb) and mean value of whole fleece achieved by each classer were calculated.

III. RESULTS

(a) Selection Differentials for Fleece Value

The numbers of participants in each group who attained different percentages of the total available selection differential for fleece value are shown in Figure 1. The details of the results obtained by the 16 participants who secured 75 per cent. or more of the total selection differential for fleece value are set out in Table 1.

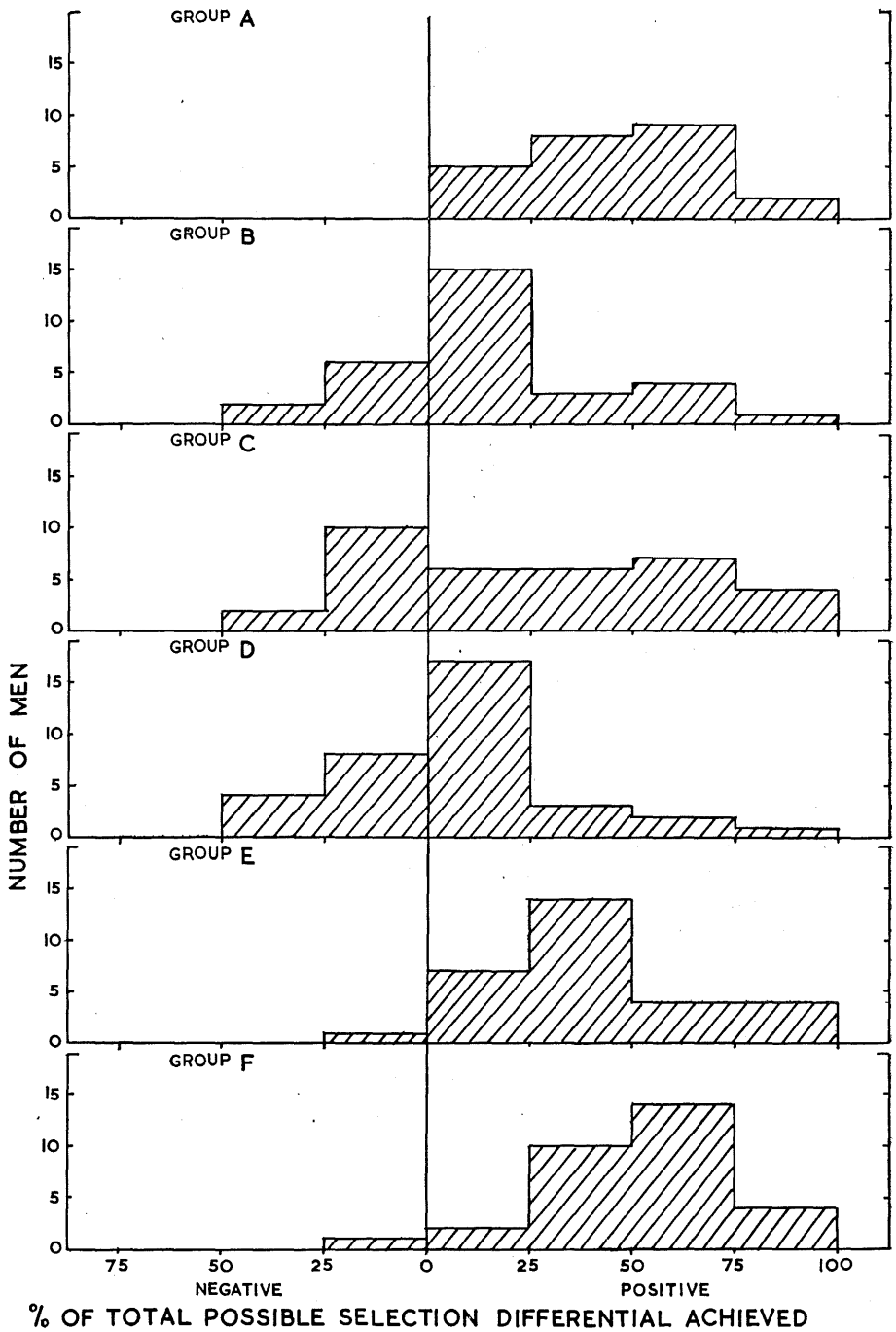

Fig. 1.—Number of men in each group who achieved different percentages of the available selection differentials when selecting sheep for high commercial return.

TABLE 1

PERCENTAGE OF TOTAL AVAILABLE SELECTION DIFFERENTIALS ACHIEVED BY INDIVIDUAL PARTICIPANTS IN EACH GROUP

Group	Ranking of Classer within Respective Groups	Percentage of Total Available Selection Differentials Achieved			
		G.F.W.*	C.F.W.†	Price/lb	Fleece Value
A	1	92·8	88·0	11·1	81·1
	2	50·0	59·8	66·7	79·7
B	1	50·3	80·8	20	85·1
C	1	99·0	100	−20	100
	2	99·0	100	−20	100
	3	99·0	100	−20	100
	4	85·9	76·5	0	78·8
D	1	81·5	79·9	50	75.0
E	1	81·0	95·6	40	95·7
	2	70·0	85·3	40	85·9
	3	65·0	76·5	40	78·6
	4	75·0	80·9	0	77·8
F	1	53·3	65·6	50·0	77·8
	2	53·3	65·6	50·0	77·8
	3	53·3	65·6	50·0	77·8
	4	53·3	67·2	41·7	77·8

* G.F.W.= Greasy fleece weight

† C.F.W.= Clean fleece weight

(b) Repeatability

The results obtained by two participants who were present on all occasions, and of one who was present on four occasions, were examined for repeatability. These participants made two choices: (*a*) of 5 sheep as requested; (*b*) of 7 sheep initially, and of a final 5 when fleece weights were known. When working in the flock where the number of sheep selected was reduced to 2, those men selected (*a*) 2 sheep as requested, and (*b*) 3 sheep initially and finally when fleece weights were known.

The results that they obtained, and which are not included in Table 1, are summarized in Table 2.

TABLE 2

REPEATABILITY WITH AND WITHOUT FLEECE MEASUREMENT AS AN AID TO SELECTION

Classer and Method		Percentage of Total Selection Differential for Fleece Value Attained on 6 Different Occasions					
		A	B	C	D	E	F
1	V.A.	83	84	100	92	88	82
	V.A. + M	94	94	100	96	94	92
2	V.A.	78	78	94	83	81	79
	V.A. + M	90	90	100	91	92	90
3	V.A.	84	86	..	94	..	84
	V.A. + M	92	92	..	100	..	92

V.A. = visual appraisal; V.A. + M = visual appraisal + measurement

(c) Selection Against Faults

The number of participants in each group who attained various percentages of the total available selection differential for fleece value by culling five sheep from three flocks is shown in Figure 2.

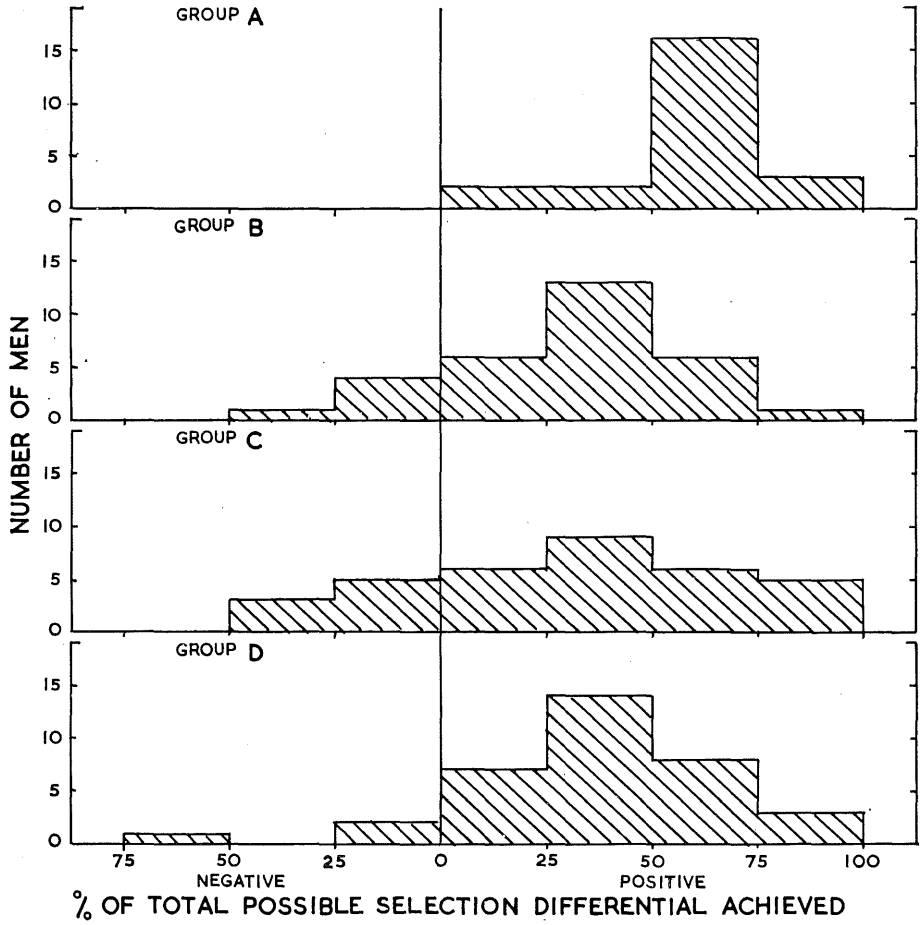

Fig. 2.—Number of men in each group who achieved different percentages of the available selection differential when selecting cull ewes from each flock.

(d) Distribution of Votes

The distribution of votes for or against different sheep in three flocks according to the percentage of the available selection differential that would have been achieved by their inclusion or exclusion from the flock is shown in Figure 3.

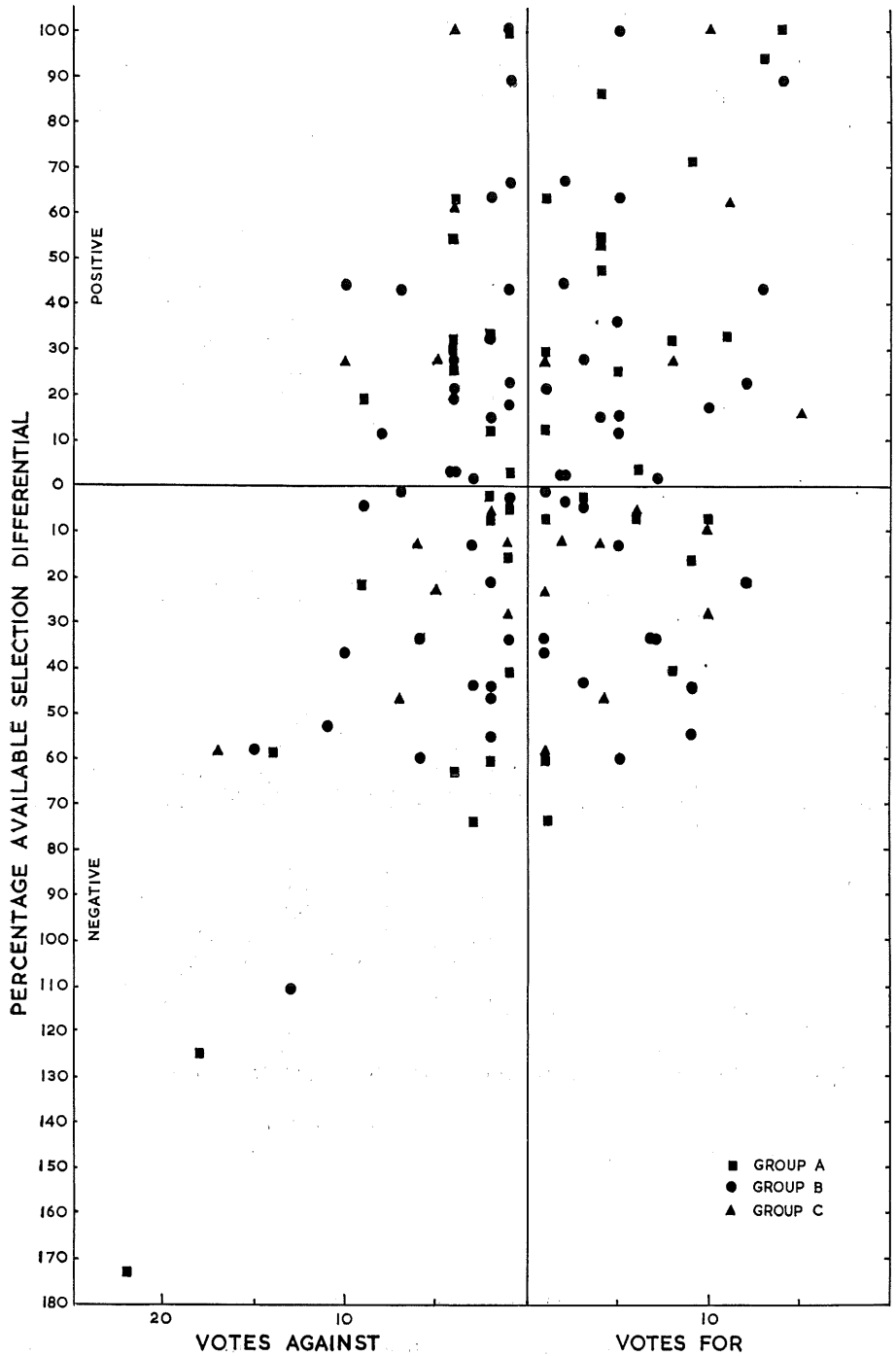

Fig. 3.—Number of votes recorded for and against individual sheep in relation to the percentage of the selection differential that would be achieved by their exclusion from the flock.

IV. DISCUSSION

The task set participants in these exercises was difficult. When selecting the five best sheep each classer was required to choose the animals with the most valuable fleeces from his estimate of the weight and the ruling market price per pound of the wool that each sheep carried. The distributions in Figure 1 are skewed, and a proportion of participants in Groups A and E showed a considerable ability to select sheep that carried the most valuable fleeces. However, because of the differences between the sheep submitted to each group, valid comparisons between the skills of participants in the different groups cannot be drawn.

Different results may have been obtained if the participants had been asked to class rams and to choose them on their phenotypic merit. In these circumstances more emphasis may have been placed on factors other than fleece weight and quality. However, the data show that 58 per cent. of the members of Group F secured at least 50 per cent. of the available selection differential for fleece value. Table 2 shows that men who demonstrated the repeatability of their skills for the selection of sheep by visual appraisal could achieve greater selection differentials if they combined fleece measurement with visual appraisal as an aid to selection. A properly organized programme of fleece measurement also gives a useful degree of quality control over such characters as staple length, mean fibre diameter, evenness of fibre diameter, crimps per inch and percentage yield.

The results achieved when five sheep were culled from each flock (Figure 2) are also of interest. They suggest that some sheep classers can identify low-producing sheep, although it is clear that, in some instances, emphasis may have been placed on points other than low commercial return. This suggestion is supported by Figure 3, which shows the distribution of votes for and against the sheep cast by participants in three groups.

Care is necessary in interpreting the results, as each fleece was typed subjectively by one classer. Prices fluctuate considerably and those from any sale may not be completely representative for purposes of comparison. In addition, assessing fleece value by multiplying price per pound by greasy fleece weight does not take into account relative proportions of skirtings, bellies, etc.

V. ACKNOWLEDGEMENTS

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