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# Face Cover in Corriedale Sheep

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ORIGINAL ideas from which spring new fields of scientific endeavour occur but rarely. More often inspiration comes to us through the application of some concept to our particular environment. In this the matter of face cover is no exception. We have all known that our sheep were undergoing continuous change and that in one particular aspect—face cover—our sheep have been becoming progressively more woolly-faced. We had our opinions but no one thought sufficiently strongly about the matter to do anything. The spark that lit the prairie fire was kindled in the United States and first caught on here following the publication of a paper in the *Journal of Animal Science* in 1949. In this paper Dr. Terrill showed in his Rambouillets, a Merino type fine-woolled sheep inhabiting the range country of the United States, that sheep with a high degree of face cover weaned 13 per cent less lamb but clipped 0.2lb. more wool per ewe than did clear open-faced sheep. Knowing how our own New Zealand sheep had become covered in the face during the last 50 years the question was immediately posed: does this face-cover effect operate in our breeds in our environment, and has the policy of our sheepbreeders in this respect been wrong?

In 1950 at Lincoln College we commenced to face-grade the whole of our Ashley Dene flock and have done so every year since, with the aim ultimately of relating the production of our sheep to the grade of face-cover. The Ashley Dene flock consisted of Corriedale ewes and Corriedale hoggets but it also included several hundred Romney-Corriedale three-quarter bred ewes which had been bred for mating to Southdown rams. To avoid justifiable criticism we have analysed the data from the pure Corriedales and the Romney-Corriedales separately, though suffice it to say here, the result was much the same in both cases.

The normal management of the Corriedale replacement hoggets was to give them a light eyewigging and crutching at weaning, a full eyewigging and crutching in June and shearing in October. The ewes were similarly given a light eyewigging and crutching, usually in February just before mating, a full eyewigging and crutching in June and shearing in November. It is important to realise that the face cover effects are obtained in spite of these eyewiggings.

The hoggets and ewes were invariably graded at the winter crutching into three grades — open, intermediate and covered — and gradings were found to be very repeatable. All sheep were individually identified by eartag and records of bodyweight, fleece weight, weaning weight, and deaths were kept. The ewes were run in mobs of about 200-400 and initially the analysts of production records in terms of face cover was made in each mob separately. Mobs in which full production records were not available were discarded. It was found that the proportion of the three face categories was very similar both as between mobs and between years. This fact has enabled the whole material derived from different mobs and different years from 1950-55 inclusive to be assembled into a single set of results.

(a) **Corriedale Hoggets.** The results of analysis of 569 hogget-years are given in Table I. These hoggets were not shorn as lambs.

The main differences shown are that open faced hoggets are 3-4lb. heavier than covered faced ones, there is no effect on fleece weight,

**TABLE I (Liveweight and wool production of hoggets in relation to face cover).**

	Per cent Grading	Liveweight 6 months	Liveweight 18 months	Fleece wt.	Fleece Count	Fleece Grade
Open . . . . .	29	69	95	8.92	56.9	7.84
Intermediate . .	36	67	95	8.81	57.3	8.21
Covered . . . . .	35	65	92	8.88	57.1	8.56

but fleeces from open faced hoggets have consistently graded slightly worse than those from covered faced hoggets by 0.72 of the above arbitrary units or by half this, namely, one-third of a commercial grade.

(b) **Corriedale Ewes.** The analysis covers a total of 1508 ewe-years, and is summarised in Table II.

**TABLE II. Lamb and Wool Production of Corriedale Ewes in relation to Face Cover.**

	Per Cent Grading	Mean Livewt.	Lambs Born	Ewes Barren	Lambs Dying	Lambs Weaned	Lamb Weaning wt.	Relative Lamb Prodn.	Fleece wt.	Fleece Count
Open	22	120	131	4	14	108	63	125	8.85	56.7
Intermed.	42	119	132	8	15	104	63	120	8.78	56.5
Covered	36	117	122	9	18	88	61	100	9.01	56.5

**Note:**

- (i) Mean Liveweight is the autumn weight.
- (ii) Lambs born equals lambs born per 100 ewes lambing.
- (iii) Lambs dying equals the number of lambs born dead or dying before weaning, as a percentage of total number of lambs born.
- (iv) Lambs weaned equals number of lambs weaned per 100 ewes mated.
- (v) Weaning weight is age corrected and single/twin ratio corrected weaning weight.
- (vi) Relative lamb production is the actual liveweight of lamb weaned per 100 ewes mated relative to the covered faced ewes.

It will be seen that roughly one quarter of the ewes graded open and somewhat over one-third each as intermediate, and covered. Comparing the open faced ewes with the covered faced ones it will be seen that the open faced ones were 3lb. higher in bodyweight, dropped 9 per cent more lambs per ewe lambing, had fewer barren ewes, lost fewer lambs after birth, weaned lambs of higher weaning weight. In toto they weaned 25 per cent more lamb per ewe mated, but clipped fleeces 0.2lb. lighter in weight. In one mob from which data are available there were no differences in fleece grade or longevity of the ewes.

(c) **Romney-Corriedale Ewes.** There were 1325 ewe-years in this analysis, the results of which are given in Table III.

**TABLE III. Lamb and Wool Production of Romney-Corriedale Ewes in relation to face cover.**

	Per Cent Grading	Liveweight	Lambs Born	Ewes Barren	Lambs Dying	Lambs Weaned	Weaning Weight	Relative Lamb Prodn.	Fleece wt.	Fleece Count
Open	23	123	144	6	10	121	71	121	9.61	52.5
Intermed.	50	118	135	5	12	112	70	112	9.78	53.0
Covered	27	114	128	7	12	104	67	100	10.04	53.6
<b>Fleece Grade</b>										
Open . . . . .			8.20							
Intermed. . . . .			8.25							
Covered . . . . .			8.40							

There is a suspicion from the wool count data that ewes throwing more to the Romney tended to go into the open category but calculation would indicate that if such were the case its effect would be quite small in relation to the differences observed.

In these Romney-Corriedales the proportions were one-quarter each in the open and covered and one-half intermediate categories.

In comparison with the covered faced ewes the open faced ones were 9lb. heavier in bodyweight, dropped 16 per cent more lambs, had slightly lower barrenness, fewer lambs dying, higher weaning weight, together weaned 21 per cent more lamb per ewe mated. On the other hand they clipped fleeces 0.4lb. lighter, of slightly stronger count and lower grade.

#### (d) Stud Corriedale, Romney and Southdown Ewes.

The College stud flocks were not face graded until 1955 and by using that year and working back on previous years we have made an analysis restricted to (i) lambs born per ewe lambing, (ii) ewe fleece weight, (iii) shurl hogget fleece weight. Using our Ashley Dene ideas of grading, practically none of the Corriedale and Southdown ewes had open faces and only 20 per cent of the Romneys. More than half of the ewes in all these breeds were covered-faced. The analysis covering over 800 ewe-year records and comparing open plus intermediate against covered, confirms the results from Ashley Dene in all three breeds, but in the shurl hoggets there was a 0.2lb. and a very slight grade difference in favour of the covered faced hoggets in both Corriedales and Romneys. A study of Corriedale, Romney and Southdown sheep shown at the Royal Show, Christchurch, in 1955, revealed a very high proportion of covered faced sheep and very few open-faced ones.

#### DISCUSSION:

Open-faced hoggets are larger in size than covered-faced ones but it is unfortunate that we have no data concerning their relative mortalities. At Ashley Dene there were no differences in weight of woolly hogget fleeces though the open-faced ones were slightly lower in grade, while in both the Corriedale and the Romney stud hoggets the shurl hogget fleeces of the open-faced sheep were 0.2lb. lower in weight and very slightly lower in grade. Obviously more work is required to be done in respect to hoggets.

As far as the ewes are concerned—and the main interest is in ewes—we might legitimately combine the Corriedale and Romney-Corriedale sheep since the results were similar in both series and such differences as did exist are most probably due to lack of numbers used. Averaging these two series we find that open-faced sheep produce 23 per cent more lamb at weaning per ewe mated than

covered-faced ones, this increase being the resultant of the components—barrenness, lambs born, lambs dying, weaning weight. On the other hand covered-faced sheep clip 0.3lb. more wool with a strong suspicion that it is of slightly higher grade. This difference in fleece weight is greater than can be accounted for by the number of lambs weaned which, together with the fact that covered face sheep are slightly smaller, does prove that covered-faced sheep are more efficient wool producers. The intermediate-faced ewes approximate more closely to the open-faced ones, weaning 7 per cent less lamb than open-faced ones, but 16 per cent more lamb than the covered-faced ones. Their wool was likewise much closer to open than covered-faced ewes. In other words the real nigger in the woodpile is that one-third of the flock which is covered-faced.

There are some ancillary factors which we have been unable to assess in practice though probably a reasonably accurate theoretical estimate could be made. These include on the one hand the relative carrying capacity which would favour covered-faced sheep due to their smaller size and poorer thrift and, on the other, the degree of selection of replacements available favouring open-faced sheep with their larger number of ewe lambs weaned. We have, unfortunately, no reliable estimate of hogget or ewe mortality, nor of longevity. However, the picture is sufficiently clear and decisive for us to believe that it is unlikely to be altered very materially by these considerations. The alternatives are open-faced sheep with 23 per cent higher lamb production or covered-face sheep with 3 per cent higher wool production and of slightly higher grade. From an economic point of view—and that is the deciding factor—the open-faced sheep is greatly to be preferred and covered-faced sheep should be culled out of the flock. The greatest rate of progress will, however, come through the use of open-faced rams.

At Lincoln we have as yet no experimental data to prove whether the face cover effect is a genetic or an environmental effect, or both. Theories could be advanced that it might be related to light rhythm contrasts, to ability to forage, or to a negative genetic correlation between fleece weight and lamb production but the evidence is lacking.

Terrill and Hazel have shown the heritability of face cover in Rambouillets to be high. We have no estimate in our Corriedales except a belief that it is high. Assuming heritability to be fairly high, selection of rams and ewes will be a powerful method of achieving our objective of an open-faced flock. Our biggest job, however, must be to get the stud breeders to select strongly for open faces and so provide the industry with adequate numbers of suitable open faced rams. This will take time since knowledge of stud flocks known to us, and of the wide range of Corriedale and Romney rams entered for the Shows indicates that open-faced rams are in a very considerable minority. Further, it requires an admission that the policy of breeding more and more wool on to the face and points of our sheep, however correct it may have been in respect to wool alone, has in fact been a retrograde development. It now requires a reversal of that policy. One can understand that the psychological reaction of stud-breeders to this would be fairly strong. However, with some exceptions we are all to blame, even including the College and Research Stations. I hope therefore that this symposium will be sufficiently wide in its coverage of the effects of face-cover on sheep production and sufficiently foolproof in the data presented, so that the swing of the pendulum won't come back and hit us in another 50 years' time.

#### REFERENCES:

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