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Some Variations in the Fleece of Romney Marsh Stud Ewes

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THE data on which this paper is based were collected during progeny test surveys in the "Rinaultrie" Romney Marsh stud flock. Rinaultrie is situated on the banks of the Hinds River in the Mayfield district of Mid-Canterbury, twenty miles west of Ashburton and some ten miles east of the foot of the Mt. Somers range (5000-7000 ft.). The altitude of the farm is 800-900 ft. and the soil is a silt loam with some gravel. The area shares with the foothills to the west a heavier summer rainfall than the "Plains" and a winter period which is reckoned to be one month longer. The average rainfall is of the order of 39 inches and there is at least one fall of snow each winter.

During the period of the present survey the farm management policy remained unchanged. Supplementary feeds for the flock always included a variety of crucifers (turnips, swedes, marrow stem kale) and lucerne hay.

The noteworthy weather features for each year of the survey have been summarised by Mr. Raymond Oakley (the owner of the Rinaultrie flock) as follows:—

1943.—Rainfall 31.67 inches.

Autumn and winter good until June when there was 5 inches of rain including one foot of snow. This was followed by heavy frosts and the sheep had little to eat for two weeks. July and August were clear and frosty but were followed by 7.92 inches of rain including two falls of snow in September. There was little grass growth until the end of October. A difficult year.

1944.—Rainfall 44.04 inches.

Hot and dry till mid February when heavy rains (5.16 inches) gave good autumn pasture growth which with fine weather carried through until the end of June. The winter was fine with plenty of feed. A fall of 2½ inches of snow in September disappeared quickly and was followed by a mild spring with good grass growth. A good year.

1945.—Rainfall 47.4 inches.

A wet, boisterous, cold year. Supplementary crops were good. In mid July 23 inches of snow fell and lay on the ground for five weeks. During that time there was a long succession of heavy frosts. A very bad year.

1946.—Rainfall 37.5 inches.

A good winter with no snow recorded but followed by a wet cold spring which retarded pasture growth. Feed supplies good. A good year.

1947.—Rainfall 38.2 inches.

Similar to 1946. No snow but a wet cold spring. Supplementary crops very good and the flock lambed in very good condition. A good year.

1948.—Rainfall 36.4 inches.

A good autumn but winter cold with several light falls of snow which lay only a short time. A good year.

1949.—Rainfall 36.2 inches.

A hot, dry summer and autumn. Supplementary crops grew poorly. Snow in July (10 inches) which lay only a few days. A fair year but winter feed in short supply.

1950.—Rainfall 45.4 inches.

Rainfall well distributed. The winter and early spring mild but followed by a wet late spring. No snow recorded. Supplementary crops good. A good year.

The shearing each year was during the last week of November and the first week of December. As each ewe was shorn it was identified by its numbered ear tag. The fleece was weighed on spring scales weighing to 0.1lb before being thrown on the rolling table. While on the table general observations (cot, hairiness) were noted and three samples (shoulder, middle, britch) were taken from the fleece for observations covering staple length, soundness, count, character and type.

The fleece weights quoted do not include the belly wool. Crutching which is carried out in August removes a variable amount of belly wool. For this reason little importance can be attached to the weight of belly wool at shearing. Random samples of belly wool at shearing gave weights ranging from 0.7lb to 1.4lb with an average of about 1lb.

SEASON AND FLEECE WEIGHT

(Table 1)

Average Fleece Weight for all Ewes Recorded 1943-50.

	1943	1944	1945	1946	1947	1948	1949	1950
Av. Fleece Weight lbs.	9.2	10.3	9.1	9.9	9.8	9.7	9.8	9.8
Ewes Recorded	327	336	310	366	339	358	356	354

The average fleece weight ranges from 9.1lb to 10.3lb. The best season 1944 has on each side the worst season 1943 and 1945. The period 1946 to 1950 has been relatively uniform.

BREEDING BEHAVIOUR AND FLEECE WEIGHT

(Table 2)

Year	Single Lamb		Ewes with			Dry Ewes	
	Fleece Wt	No. Ewes	Twin Lambs Fleece Wt	No. Ewes	Difference in lb.	Fleece Wt	No. Ewes
1943	9.3	204	9.0	123	0.3	—	—
1944	10.7	205	10.0	96	0.7*	11.7	35
1945	9.2	175	8.8	130	0.4	9.9	5
1946	10.1	210	9.5	135	0.6*	11.3	21
1947	10.0	177	9.3	140	0.7*	10.7	22
1948	9.8	224	9.6	115	0.2	10.4	19
1949	9.9	230	9.6	116	0.3	10.5	10
1950	9.7	248	9.4	77	0.3	10.8	29
Average	9.8	1673	9.4	932	0.4*	10.8	141

* Difference significant.

The dry ewes in each season clipped about one pound more wool than the ewes with single lambs and these ewes nearly half a pound more than those raising twins. The effect of breeding behaviour was greatest in the good seasons.

THE EFFECT OF BREEDING BEHAVIOUR IN ONE SEASON ON FLEECE WEIGHT OF THE FOLLOWING SEASON

To test whether the breeding behaviour in one season influenced the fleece weight the following season the following comparisons were made.

The gain in fleece weights for ewes shorn in any two consecutive years was calculated. For each season these gains were sorted into four classes according to whether the ewes had singles or twins in the first and second year (Singles-singles; singles-twins; twins-singles; twins-twins). The average gains for each of the four classes were calculated.

The effect of bearing twins on the fleece weight of the current season was to lower the fleece weight by 0.32lb (compared with singles) after rearing a single lamb the previous year. After rearing twins the fleece weight was lowered by 0.30lb (compare the 0.40lb in Table 2 which is based on more fleeces).

These effects are significant but their difference 0.02lb is not. No carry-over effect of breeding behaviour has been found.

"COT" AND "BREAK"

The influence of season and breeding behaviour on the incidence of "cot" and "break" in the flock is shown in Figure 1.

Both "cot" and "break" were scored for each fleece according to severity. Thus "bad break" scored 6 and "slight break" scored 2. The average scores for ewes bearing singles and twins in each year were worked out and expressed as percentages of the greatest possible scores. The smallest number of ewes represented by any point is 77 (Twins 1950).

SEASON AND "COT" AND "BREAK"

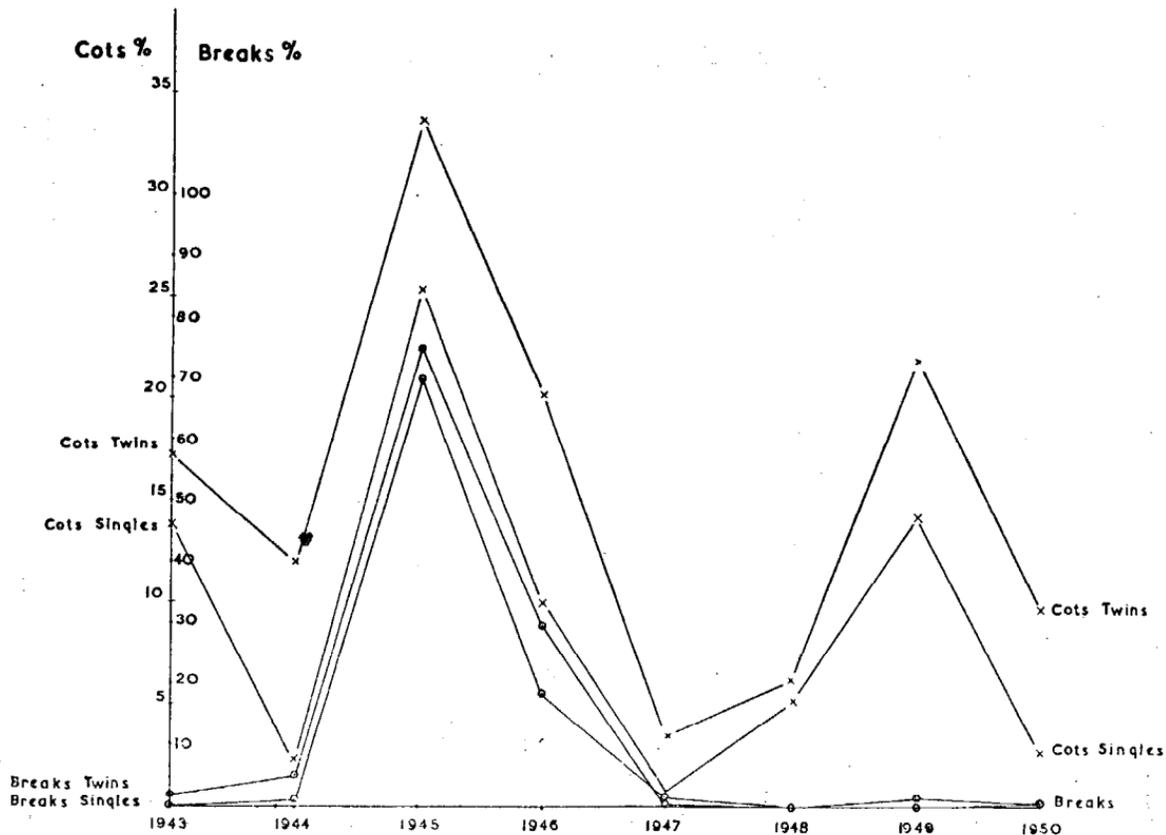
The outstanding feature is one poor season 1945 when about half the total fleeces recorded had some degree of "cot" and 13 per cent. of the ewes with singles and 18 per cent. of the ewes with twins shorn fleeces which were graded "bad cot."

In the same year nearly all the fleeces were graded "break" but ewes with twins were affected to a slightly greater extent than ewes with single lambs. The only other season in which an appreciable amount of break was recorded was 1946 when about half of the ewes were effected, ewes with twins, more so than ewes with single lambs.

There was some coting in all seasons, the worst after 1945 being 1949 when about one fifth of the fleeces were affected, most of them severely.

Further information about coting was obtained from the four year records of 115 ewes which were born in 1945 and entered the ewe flock in 1947. The proportion of cots amongst these ewes was close to that of the whole flock each year. Of the 115 entering the flock in 1947, 72 were still recorded in 1950. These records show that 85 of the 115 had no cot recorded though presumably some which died or were culled would have had. Twenty-one had one cotted fleece, seven had two and two had three in the four seasons. If coting occurred at random, all sheep being equally likely to have a cotted fleece in any given year, it would be expected with this total number of cotted fleeces that twenty-nine would have one cotted fleece, five would have two, and one would have three. The discrepancy is not quite significant but it suggests that sheep cotted one year are likely to be cotted another year.

A better test, since coting was fairly severe in 1949, is to compare the number of cots in other years for sheep which were or were not cotted in 1949. Considering (to be safe) only those which were still recorded in 1950 the records show that of the eleven cotted in 1949 five were cotted in another year and of the sixty-one not cotted in 1949, nine were cotted in another year. The probability of obtaining these figures by chance is only 3.2 per cent. This probability may be slightly low because a few fleeces were not recorded in 1948 and there is a small chance (about 1 per cent.) that a sheep which was cotted in 1948 and in no other year was missed. Even if two sheep (out of 52) were missed the probability of the figures would be only 5.9 per cent. Thus there is a significant (though not very high) tendency for a ewe cotted in one year to be cotted in another year.



THE LEGEND FOR THE GRAPH IS:

FIGURE 1.

Relative severity of cots and breaks in fleeces of ewes bearing single and twin lambs. Scores have been reduced to an equivalent percentage of BAD cots and breaks.

TWINNING AND COTS

Bearing twin lambs has some influence on the incidence of cotting although the proportion of twin-bearing ewes in the cotted group is close to the flock average. However amongst the ewes recorded as cot, the proportion of ewes with twins was significantly higher in the bad season 1949 than it was in 1950.

COUNT AND COT

The 115 ewes which entered the flock in 1947 were studied for "count" in relation to "cot."

On the basis of the count as recorded at the first shearing the cotted group was slightly but not significantly coarser.

Ewes which later produced cotted fleeces showed a bigger number of double count gradings (e.g. 46s-43s). This is apparently due to the inability of the observer to assess the count with confidence owing to the mixed fibre types in the staple.

Summary.

Fleece weights in the "Rinaultrie" Romney Marsh stud ewe flock over a period of eight years show considerable annual differences.

Breeding behaviour of the ewes has a significant effect on the fleece weight in good seasons, but little effect in poor seasons.

Breeding behaviour in one year has no effect on the fleece weight in the following year.

The incidence of "cot" and "break" is related to both season and breeding performance.

A ewe having produced one cotted fleece has a tendency to produce additional cotted fleeces.

There may be a weak relationship between "count" and the incidence of "cot."

Cotted fleeces show a high proportion of "double count" gradings.

Acknowledgment.

The assistance of the Department of Scientific and Industrial Research with finance and co-operation is gratefully acknowledged, together with thanks to Mr Raymond Oakley for his sustained interest and enthusiasm.

Discussion

Mr Logan: Is the time interval between lambing and shearing long enough to explain the difference between the fleece weights of single and twin-bearing ewes? Does the position of the break or cot indicate times of bad weather, poor feeding or lambing time?

Mr Stevens: A difference was recorded between single and twin-bearing ewes but we have not attempted to give the reason for it. In most years the breaks occurred at short intervals round about lambing time.

Mr. Carter: Is there any difference between one season and the next in the fleece weight/live weight relationship, on covariance analysis?

Mr. Stevens: No body weight data were collected. The dry ewes in any year were a random group and because they were dry they would be heavier.