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PERFORMANCE RECORDING OF SHEEP

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SUMMARY

A scheme for recording productive characteristics of sheep in New Zealand and the method by which the recorded information is made readily available to the sheep breeder is described.

OVER the last 15 to 20 years there have been considerable changes in the breeding of livestock throughout the world. Breeding programmes based on recording schemes have been inaugurated in many countries. The reasons for these changes are many, but they tend to be associated with an increase in the scale of farming operations and the intensification of farming, with emphasis being placed on efficiency of production. Changing ideals to meet changing consumer requirements are also pertinent factors. An increasing awareness, too, of the potential of genetically better stock has played an important part. Commercial producers are insisting that breeders supply stock of higher genetic potential and commercial worth to meet the requirements of the ultimate consumer of the product.

There tends also to be, in many countries, a dissatisfaction with the level of production of many existing breeds and there are, for example, modern developments in animal breeding such as the production of a breed like the Colbred, where qualities from four very different breeds are combined to produce a new breed to be superior in fertility, milking and mothering ability, etc., to be used to produce half-bred dams for the production of a lamb to meet modern consumer demands in the most efficient manner.

Recording of productive qualities is nothing new. Many breeders of sheep and cattle have had elaborate recording schemes for many years. Recording of productivity *per se* is not, however, an improvement programme, but no improvement programme can function without recording as a service. It is the efficient use of the appropriate recorded data which can lead to progress. In this con-

nection it is pertinent to make brief mention of the few general genetic principles involved in an efficient performance recording scheme.

First, the objective in improvement must be as simple as possible and it must be pertinent. Breeding for characters which have little or no economic importance merely makes the task of improvement more difficult, since the greater the number of characters considered in selection, the weaker the selection for each of them. Lush gave this observation a numerical expression over 30 years ago and since that time a considerable amount of research has served to confirm its validity. The inclusion in the selection programme of characters of no or little commercial importance, can result in little or no effective selection for those which are important.

The second point is that the characters which are to be improved must be capable of being measured and of being recorded. Ideally, they should be measurable objectively with simple equipment, although scoring systems based on hand and eye evaluation often have to be used in the interests of practicability and speed of operation.

The third point is that the characters selected for improvement must be capable of responding to selection. It is therefore important to know something of the heritability of the characters. Likewise, the repeatability or the correlation between the character on the same sheep in successive years is valuable information which enables the probable gain in the lifetime productivity of selected animals to be assessed. It is quite clear from work in New Zealand and overseas that the characters of economic importance in our livestock do respond to selection sufficiently rapidly to justify the inauguration of a recording scheme.

Finally, the most efficient and practical method of selection to be used must be decided upon. Most of the characters to be discussed are highly heritable so that individual selection alone can result in worthwhile progress. Progeny testing can, for some characters, be a useful supplement to individual selection. The main objection to progeny testing is the extension of the generation interval which inevitably results. As will be mentioned later, it is possible to use progeny testing in those cases where it can be of value without extending the generation

interval by the breeding of animals at what may be regarded as an immature age.

The use of a selection index to combine the information on several traits is a device that has received considerable attention and is used in the recording scheme to be discussed. Correction factors to adjust for known environmental effects contribute to greater precision in the evaluation of the characters of commercial importance, and enable recognition of the most productive animals within the flock or herd to be assessed with greater accuracy.

At this stage it would seem to be of prime importance to rank the animals within a flock or herd as a first step. The recognition of the best animals between flocks and herds is a future extension of recording, which would require knowledge of differences between flocks, districts, management practices, etc., knowledge which at present is not available. It is most likely that this would require central testing stations where the performance of the best animals selected within flocks could be compared under uniform conditions.

New Zealand is fortunate in being as well, if not better provided than most primary producing countries with the basic data pertinent to animal improvement. Thanks to the studies in particular of Professor A. L. Rae and his associates, over the past twenty years, it is now possible to inaugurate a performance recording scheme with every confidence as to its soundness and with a fairly reliable estimate of the sort of progress which might be expected (Rae, 1966). Not only has Rae (1958, 1962, 1963, 1964) provided genetic parameters pertinent to sheep in New Zealand, but has outlined on many occasions the lines along which a sheep recording scheme could be planned. It would be quite redundant to discuss further the background data on which the recording scheme is based since it has been presented so efficiently and so recently by Rae, to this Society. Indeed, he is so closely identified with the proposed recording scheme that the writer hopes he will be forgiven if, in reporting it, he has plagiarized statements so recently made by him.

The sheep recording scheme which it is proposed to outline briefly, owes its genesis to a report to the Director-General of Agriculture prepared by A. L. Rae and E. A. Clarke in 1966. This unpublished report, which has now

been given a fairly wide circulation, resulted in funds being made available to initiate a recording scheme which at the outset is being operated by the New Zealand Department of Agriculture. Funds have also been made available by the New Zealand Meat Producers' Board and the New Zealand Wool Producers' Board to launch an interim recording scheme. The scheme is being operated by the Sheep and Wool Division whose field officers are functioning as recording officers. The Romney Survey is co-operating with the scheme and will undertake the field work in some of the flocks in their survey.

The Biometrics Section of the Department of Agriculture is providing the computational service including the programming.

A committee consisting of representatives of the two producer boards, the Romney Breed Society, the United Breed Societies, Federated Farmers, the Romney Survey and the Department of Agriculture, has been formed to represent the interested parties in such a scheme and to present opinions and advice on the operation of the scheme. It is anticipated that this interim scheme will operate for three to four years and provide a free service to those breeders wishing to participate. Over this time, problems associated with the operation of the scheme can be met and overcome, by which time it is expected that it should be a service which could then be handed over to a National Recording Council akin to the National Herd Recording Council, which could operate the scheme as a service to the industry, run by the industry, for which an appropriate charge could be made to meet operation costs.

It is probably easiest to describe how the proposed scheme will operate by considering it in relation to the long-wool dual-purpose breeds, of which the Romney is the predominant one.

OBJECTIVES

In defining objectives, it is important to consider to what extent a change in each character of real commercial importance increases the financial return from the individual sheep. In the sheep breeds under consideration, this calls for information on market prices for differing quantities and qualities of wool and lambs over a number

of years. It is clear that increased lamb production ranks first in importance, followed by fleece weight. Recent studies have indicated that conformational characters are of comparatively minor importance in affecting the value of marketable meat. This does not mean that conformation is of no importance, since under this term are defects which may render the animal a poor performer, in some environments at least. It will be indicated later that these considerations are not neglected. Even in specialized fat lamb production, research has shown that conformation of the Romney ewe has little influence on the quality of the lambs produced by crossing with the Down ram. Exceptions to this statement there may be, but the point is that they are of minor significance.

CHARACTERS TO BE MEASURED

The following information is recorded on the basis of the above objectives in addition to the normal pedigree details of sire and dam of each lamb, its date of birth, birth rank, rearing rank, etc.

FERTILITY RECORDS

Fertility can be measured in various ways, but only two methods can be used with comparative ease in most stud flocks.

1. *The Number of Lambs Reared by Ewe*

This is information which is normally kept and is available in the performance records.

2. *Total Weight of Lamb Weaned by the Ewe*

This includes the information given in (1) above plus information on the milking and mothering ability of the ewe. It can be measured only on the ewe; the only indication of the ram's ability to breed daughters with high lamb production comes from the performance of his female relatives. It differs from most other characteristics of the sheep which can be measured on both the ewe and the ram and can be selected for directly in both sexes.

Although the estimates of heritability of fertility are low and repeatability medium, there is evidence from both Ruakura and Massey which shows that it responds to selection and that worthwhile progress can be made. Rae

(1966) indicates that a gain in terms of lambing percentage of about 1½ to 2% per annum could be possible.

Fertility is clearly affected by differences between years and between ages of dams. In this recording scheme adjustment for these effects is achieved by expressing the weight of lamb weaned as a deviation from the mean of the year-age group class to which the dam belongs. It is also necessary to correct for the age of the lamb at weaning, sex, birth rank and rearing rank. The following correction factors are being used:

Single lamb reared as single: No correction

Single lamb reared as twin: Add 10 lb

Twin reared as twin: Add 10 lb

Twin reared as single: Add 7 lb

Triplet reared as triplet: Add 15 lb

Triplet reared as twin: Add 12 lb

Triplet reared as single: Add 10 lb

To correct for sex: Add 4 lb to the weaning weight of the ewe lamb to adjust to ram lamb basis.

To correct for age at weaning: Add or subtract 0.3 lb for every day under or over a standard age of 100 days.

The latter correction may be underestimating the growth rate of lambs under some situations. However, if it is in error, the error is in the right direction since it penalizes the late lamb and praises the early lamb, which is in line with the requirements of most breeders and certainly in line with commercial requirements.

These correction factors may be refined as the result of data accumulated under the recording scheme. In the meantime they can be regarded as sufficiently accurate for practical purposes.

FLEECE WEIGHT

Greasy fleece weights are required for both ewe and ram hoggets and its measurement presents no major difficulty. The correlation between greasy fleece weight and clean fleece weight within a flock is high [r is greater than + 0.9 (Clarke, unpubl. data)]. There is ample evidence which suggests that, with sheep which have been shorn as lambs, there is little to be gained by attempting to adjust hogget fleece weight for any of the known en-

vironmental effects. Early estimates of the heritability of hogget fleece weight were low, but later estimates and the results of selection experiments indicate that it responds at a reasonably rapid rate to selection on individual merit. It is probable that the heritability is of the order of 0.3 to 0.4. The repeatability of fleece weight is high and is probably of the order of 0.6.

FLEECE CHARACTER

There is no simple and quick way of measuring this objectively, but it can be scored visually with a high degree of repeatability, by a skilled observer. It is not proposed to include it as a trait in a selection index, since it cannot be objectively assessed and since it is of low economic importance compared with fleece weight. It can be scored on a scale of 1 to 7 either on the fleece before shearing or on the shorn fleece and recorded in the Remarks column of the Shearing List. It is left to the breeder to set a minimum standard below which sheep are culled.

COUNT

This can be assessed visually and with high repeatability by a skilled observer. It is information sought by some breeders and prospective purchasers of rams. Sheep and Wool Instructors will assist breeders where required in assessing fleece character and count.

OTHER CHARACTERS

There are many other characters of the fleece of minor economic importance such as handle, lustre, and colour. Gross faults such as pigmentation, kemps, and gross medullation, will be recorded, and levels below which culling will operate can again be set by the breeder.

With many other characteristics of the sheep, the same arguments, that they are of minor economic importance, apply. It is becoming increasingly clear that many conformation points are not closely related to productive merit and consideration of them serves only to weaken the intensity of selection which could be applied to characters of real merit. Deformities, malformations, etc., which

are known to reduce the efficiency of the animal, are recorded for culling purposes.

Selection, therefore, under the recording scheme, is concentrated on two main characters, weight of lamb weaned (which embodies fertility plus milking and mothering ability), and fleece weight. Other traits are controlled by culling those sheep which fail to meet a minimum standard. If further characters are added without due regard to their economic importance, the purpose of a recording scheme is likely to be defeated. It is believed that in practice a sheep of high merit as assessed in the recording scheme will not be lightly culled because of minor defects in characters of little economic importance. It may be placed lower in ranking for such reasons, depending on the breeder or the prospective buyer's assessment of the importance of the defect. The recording scheme imposes no restrictions of this sort and remains a flexible tool designed to assist the breeder in assessing the economic worth of the livestock. Over a period of time, it is to be hoped that it will have an educational value in causing a thoughtful assessment of the relative economic value of the many characters stressed in the show ring.

THE METHOD OF SELECTION FOR FLEECE WEIGHT AND FERTILITY

In the recording scheme the breeding value of the two-tooth ram or ewe insofar as fertility is concerned comes from the lambing performance of the dam.

As previously indicated, the term fertility has a wide connotation and includes the milking and mothering ability of the ewe and is expressed as weight of lamb weaned. The corrected weight of lamb weaned in the index is expressed as a deviation from the mean of appropriate age group of the dam. This takes account of the fact that lambing performance is affected by the year and age of the ewe. The accuracy of the information also will differ according to the number of lambings each dam has had and correction factors to adjust for this have been provided by Rae (1963).

The information on fleece weight is combined with that on fertility in the following index originally devised by

Rae and modified by one of his students, Clarke (1963):

$$\text{Index} = 10 \left[\frac{n}{4(n+2)} (\text{Deviation of weaning wt.}) \right. \\ \left. + \text{fleece wt. (lb)} \right]$$

n = the number of lambings of the dam

The fleece weight is not expressed as a deviation.

This does not affect the ranking order, but avoids the index having a negative value in most cases. The reason for aiming at a positive value is purely a psychological one. The use of the factor 10, again, does not affect the ranking, but gives the index a wider range and a bigger value—again for psychological reasons.

With the relative values of 1 lb of wool and 1 lb lamb liveweight at about 3s. to 1s., and with a heritability of the order of 0.3, the fleece weight is appropriately multiplied by 0.9 (Clarke, 1963). However, the relative values can be only approximately evaluated and the heritability figure, likewise, is only an estimate, so that, in the index above, fleece weight is multiplied by the factor 1 for the sake of simplicity. Future studies may suggest a modification of this index, but in the light of present knowledge it is considered sufficiently accurate for all practical purposes.

The following is a brief account of the step-by-step procedures which it is proposed to adopt in operating the recording scheme for long-wool dual-purpose sheep of the Romney type.

Table 1 shows the Mating List which will be issued to the breeder by the Sheep and Wool Instructor to be filled in as shown with the tag numbers of the rams and ewes. A carbon copy of this list will be retained by the breeder and a copy will be forwarded through the Sheep and Wool Instructor to the computing office. The list is issued through the Sheep and Wool Instructor so that the breeder can be instructed in the step-by-step manner in which the scheme will operate. The Sheep and Wool Instructor will check the completed lists for omissions and obvious errors.

From this Mating List the computer will provide to the breeder, again through the Sheep and Wool Instructor, a Lambing List, shown in Table 2. On the list as issued, the first four columns identifying the sires and dams will

TABLE 1: MATING LIST

Flock Code:..... Page ofPages
 Name of Breeder:.....
 Breed:
 Address of Breeder:.....
 Date: 1967

RAM		EWE		RAM		EWE	
Tag No.	Year						
3	64	1	62	5	65	16	62
		5	62			3	63
		8	63			7	63
		4	64			5	64
		7	64			12	64
		2	65			6	65
		3	65			7	65

TABLE 2: LAMBING LIST

Flock code:..... Page:.....
 Tag year: 1967 Name of Breeder:.....

Tag No.	SIRE Year	DAM Tag No.	DAM Year	Lamb No.	Sex (R or E)	Birth Rank (S, T or M)	Date of Birth Day	Month	Remarks
3	64	1	62	7	R	T	16	8	Astd.
				8	E				
3	64	5	62	14	E	S	18	8	
5	65	16	62	1	E	T	10	8	
				2	R				
5	65	3	63	10					Dry Dry
5	65	7	65	—	R	T	17	8	
				11	R				

be filled in by the computer. The remainder of this table will be filled in by the breeder. In the Remarks column, the remarks used by the breeder will be in accordance with a set of standardized remarks with which he will be provided and which will be revised as experience dictates. It might be pointed out here that two digits have been allocated in the computer programme for Remarks, which means that 99 standardized remarks could be in use and these will be allocated in blocks to the Lambing List and to subsequent lists. Again, the breeder will retain a carbon copy of the Lambing List as it will be provided in duplicate with "once only" carbon with each sheet of the Lambing List. There are no data required on this Lambing List other than those which the breeder normally records, or should normally, record. Ideally, the date of birth should be accurate, but where lambs are identified and tagged at weekly intervals, the error involved is not considered to be of great significance.

From the Lambing List the computer will then provide the Weaning List (Table 3) in which the first five columns will be output from the computer and the remaining columns will be filled in by the breeder. Again, appropriate remarks can be recorded by the breeder from a list of standard remarks provided. It is emphasized that, in all lists, the remarks are essentially for the use of the breeder and are not incorporated into the index. The remarks will be coded by the punch-card operators at the recording centre and a blank column has been provided for this purpose in the Weaning List, the Lambing List and in the Hogget Shearing List. These coded remarks will be carried forward by the computer to the final Two-Tooth Selection List and Ewe Summary.

The completed Weaning List will be forwarded to the recording office and the computer will turn out the Hogget Shearing List as illustrated in Table 4. The first three columns of this list will be computer output, the remaining columns being filled in by the breeder assisted, as required, by the Sheep and Wool Instructor. It is not envisaged that the Sheep and Wool Instructor will be present to weigh the fleeces except in the initial stages when he will be available to assist the breeder in initiating the scheme. However, it is envisaged that the Sheep and Wool Instructor will be available, where required, to

TABLE 3: WEANING LIST

LAMB		EWE		Rearing			Date of		Remarks
Sex	Birth Rank	Tag No.	Year	Lamb No.	Rank S, T or M	Weaning Weight	Day	Month	
E	T	16	62	1	T	45	30	11	
R	T	16	62	2	T	39	30	11	
E	S	7	64	3	S	60	30	11	
E	S	2	65	4	S	55	30	11	
R	T	4	64	5	T	50	30	11	
E	T	4	64	6	T	45	30	11	

TABLE 4: HOGGET SHEARING LIST

EWE		Hogget Tag No.	Fleece Weight	Quality		Remarks
Tag No.	Year			No.	Character	
Rams						
16	62	2	8.1	48	5	Kemps
4	64	5	7.9	48/50	6	
1	62	7	9.0	48	5	
7	65	10	8.2	50	4	
7	65	11	7.6	48/50	6	
12	64	13	7.5	48/50	4	
3	65	15	8.0	48/50	5	
Ewes						
16	62	1	7.2	48/50	6	Handle
7	64	3	6.5	52	6	
2	65	4	6.9	50	5	
4	64	6	6.5	52	6	
1	62	8	6.7	50	5	
5	64	9	7.0	50	4	
5	62	14	—			Died
7	65	16	6.8	48/50	6	

Flock code:.....

Page:.....

Tag year: 1967

Name of Breeder:.....

Flock code:.....

Page:.....

Tag Year: 1967

Name of Breeder:.....

Date of Shearing—Rams: 20/8/68

Ewes: 16/10/68

evaluate count, character and remarks. The Remarks column will provide information on wool defects. The assessment of the wool can be done appropriately on the sheep before shearing or on the fleeces on the wool table. It is anticipated that the Sheep and Wool Instructor will be required to assess the wool on the sheep in most cases because many breeders will be wanting to shear at more or less the same time. The wool can be assessed efficiently on the live sheep over the month before shearing. The fleece weights shown are necessarily for the hogget fleeces grown between lamb shearing and hogget shearing. There is not the information at present which will enable the hogget fleece unshorn as a lamb to be dealt with. The actual shearing date is relatively unimportant since the aim is to rank the hoggets within flocks and by sexes. In practice the ram hoggets and the ewe hoggets are shorn very often in different months. The breeder again keeps a carbon copy of the Shearing List and from the copy returned to the recording office and the previously stored data, the Two-Tooth Selection List is output by the computer. On this list the Remarks appear as numbers which can be interpreted from a set of standardized remarks and their code numbers. The Two-Tooth Selection List will show mean values for fertility rating, fleece weight, count and index values.

Table 6 shows the Ewe Summary which is also an output of the computer. It is to be noted that, with the provision for 99 remarks, the remarks on the Two-Tooth Selection List and the Ewe Summary can be as comprehensive as the breeder wishes to make them in the previous lists. Thus, he can incorporate a great deal of the descriptive material which many like to record.

A further output from the computer, an example of which is not shown, will be the average wool production of the progeny of various sires. Insofar as a summary of the fertility rating of the sires is concerned, this can be provided only when his two-tooth daughters enter into the breeding flock. In due course this will be provided, but many of the sires will not be in use when this information becomes available.

The various lists will, in the initial stages, go to and from the breeder via the Sheep and Wool Instructor so that it can be indicated to the breeder precisely how to

TABLE 5: TWO-TOOTH SELECTION LIST

Flock code:.....

Page:.....

.....Hoggets

Name of Breeder:.....

Tag Year: 1967

Tag No.	DAM		SIRE		Birth Rank	Rearing Rank	Fertility Rating	Fleece Weight	Quality No.	Character	Index	Remarks
	Tag No.	Year	Tag No.	Year								
Rams												
2	16	62	5	65	T	T	1.00	8.1	48	5	91	43
5	4	64	3	64	T	S	2.50	7.9	48/50	6	104	
7	1	62	3	64	T	T	2.17	9.0	48	5	118	16
10	7	63	5	65	T	T	4.20	8.2	50	4	124	
11	7	63	5	65	T	T	4.20	7.6	48/50	6	118	
Ewes												
1	16	62	5	65	T	T	1.00	7.2	48/50	6	82	
3	7	64	3	64	S	S	-0.50	6.5	52	6	60	51
4	2	65	3	64	S	S	1.00	6.9	50	5	79	
6	4	64	3	64	T	S	2.50	6.5	52	6	90	
8	1	62	3	64	T	T	2.17	6.7	50	5	89	

TABLE 6: EWE SUMMARY

EWE		MATING		SIRE		Adjusted		Average		Remarks	
Tag No.	Year	Tag No.	Year	Lamb No.	Sex	Weaning wt.	Deviation from Av.	Deviation			
1	62	64	5	61	2	E	55	15	15	43	
		65	6	62	4	R	60	9	12		
		66	6	62	7	E	65	5	10		
		67	3	64	7	R	60	22	13		
5	62				8	E	58			16	
		64	5	61	—		0	-40	-40		Dry
		65	6	62	1	E	50	-1	-20		
		66	2	63	3	R	56	-4	-15		
16	62	67	3	64	14	E	64	-30	-19		
		64	6	62	6	R	48	1	8		
		65	5	61	5	E	57	8	7		
		66	2	63	10	R	61	6	5		
		67	5	65	1	E	56	8	6		
					2	R	46				

use the lists and so that the Sheep and Wool Instructor can check the completed lists for obvious errors and omissions.

MEAT BREEDS

Insofar as the single-purpose meat breeds are concerned, wool production will not feature in the recording scheme. Otherwise, the recording for these breeds will be similar to that for the dual-purpose breeds.

There is much information which suggests that the growth rate of the crossbred lamb is of prime importance in profitable lamb production and that conformation of the characters is of less significance than traditionally believed. The ultimate cuts and joints, and not the uncut carcass, is the basis on which quality should be assessed. The decreasing tolerance for fat in all the major markets for lamb, would seem to be quite clear. Tenderness and flavour are important, but how to assess these rapidly and objectively is still a matter for research. The weight at weaning or growth rate to weaning, is clearly a function of the milking and mothering ability of the ewe and only

partly a reflection of the inherent ability of the lambs to grow. However, growth to weaning has been widely used overseas as a measure of performance for use in selection, although future research may suggest that this measure is putting too much emphasis on the milking ability of the ewe.

Ideally, in the selection of ram lambs, the initial selection should be made on the basis of their own growth performance followed by the progeny testing of the selected ram lambs by mating them to the kind of ewes normally used for export lamb production and recording the growth of the crossbred lambs. By mating the ram lambs as lambs, the progeny test is complete by the time they are two-tooths when the final selection can be made. In this way there is no increase in the generation interval and progeny testing becomes an efficient aid to selection. This kind of performance recording of Southdowns can be operated under a recording scheme and the ultimate aim is to provide a recording service covering these two phases of selection for all meat breeds.

An inspection of Tables 5 and 6 shows that data pertinent to selection for improvement are presented in a simple form as well as in the form of a final selection index. Thus the breeder is enabled to use either the index or fertility records or wool production data in making his selections and these data can be supplemented by the remarks he chooses to record. Likewise, the purchaser of a ram has much more than a selection index to guide him in making his selection. However, it is obvious that the purpose of a recording scheme can be defeated if too much attention is devoted to points remotely associated or unassociated with production. In practice, it is believed that, once the animals have been grouped into categories according to index values, a breeder or a purchaser of rams will hesitate to eliminate an animal with either a high index value or with high fertility or wool production records because of a deficiency of small magnitude in some character of doubtful economic value. It is expected that this will be an important educational aspect of performance recording.

It cannot be anticipated that performance recording can make an immediate and important impact on the level of production of New Zealand flocks as a whole.

Rae (*ibid.*) has given estimates of the amount of progress which could be achieved within a flock by intensive selection for productive qualities. He has also discussed the heirarchical structure of the sheep breeding industry and its effect on the rate of progress which might be achieved.

Of great importance today is the large annual increase which is taking place in the sheep numbers. This rapid expansion necessarily means that the amount of selection in both rams and ewes is at a minimum and this situation can be expected to obtain for some years to come. This, however, does not invalidate a performance recording scheme since any improvement in the general level of the ram breeding flocks can be a permanent gain to be passed on to the commercial flocks. It is believed that now is the time to initiate improvement schemes to learn the problems associated with them and to overcome these against the day when stable sheep numbers and improving lambing percentages can allow a performance recording scheme to have a real national impact.

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