

# Selection of Breeding Stock

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The topic of selecting breeding stock has been divided into two parts

- a) culling ewes and b) selecting replacement lambs.

## **a. Culling Ewes:**

Ewes should be culled on the basis of factors which will limit their future productivity. This should be done at weaning or at the latest, prior to the next breeding season. Records are necessary to do an effective job.

The following are some factors to consider:

1. Ewes which did not lamb
2. Ewes with prolapsed uteri
3. Mastitis cases
4. Undershot or overshot jaws
5. Missing or loose teeth
6. Disease carriers e.g. chronic foot rot

All ewes should be, individually inspected, records checked, and mouths, udders and feet examined.

Ewes which did not lamb: While this has a very low heritability, individual ewes which did not lamb one year have a high probability of not lambing in the following year.

Prolapse: Again there is a high probability of reoccurrence next year. Also, do not keep ewe or ram lamb replacements from a ewe which has prolapsed uterus since this problem has a high heritability. Any daughters of such ewes which are already in the flock should be identified. Avoid retaining their lambs.

Mastitis: Any known cases should be culled. The udder of every ewe should be carefully examined and those with hard lumps should be culled.

# FACTSHEET



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Jaws: Check for deformities. It may not be necessary to cull ewes but if they show signs of deformity avoid keeping their lambs.

Teeth: Undershot or overshot jaws and loose or missing teeth impair the animal's ability to eat. They are likely to be in poor condition, are unlikely to produce twins, and will not milk well due to poor feed intake. Severe cases should be culled.

Disease: Chronic foot rot cases are a hazard to the rest of the flock. They should be removed if all efforts at cure have failed.

### **Culling ewes which produce single lambs:**

Do not be too hasty to cull these ewes. Twinning has a low heritability. The reason for single lambs is much more likely due to non-genetic causes (e.g. nutrition) rather than genetics. What was the body condition of these ewes at breeding time? Perhaps special attention to these ewes at breeding would be more effective.

### **Do not cull too heavily:**

Cull ewes have little value and replacements are expensive. Most of the factors for which ewes are culled have low heritabilities and have very little effect on genetic improvement. Too heavy culling results in:

- a) More replacements needed – fewer lambs for sale
- b) The larger the number of replacements needed, the poorer the quality of some that need to be retained. One may need to keep the top 30% rather than the top 15%. The lower ones can keep the replacement rate, then only the best need to be retained.

### **Change rams rather than ewes:**

More progress will be made by being highly selective with regard to rams. It has often been said the ram is half the flock.

### **Selecting replacement lambs:**

The objective is to select genetically superior animals as replacements to bring about long term improvement. There are several problems involved:

- a) How to identify the genetically superior lambs
- b) Many important characteristics have only a low degree of heritability.

Heritability is the proportion of the difference between individuals. This is due to genetics, with the rest of the balance being due to nutrition, sex, and other non-genetic factors. For example, lambing percentage has a heritability of about 10%. Therefore, 90% of the difference one sees in lambing percentage is due to factors other than genetics.

A very important point in selection is to remember to **SELECT FOR AS LITTLE AS POSSIBLE!!!** What is meant here is to select for only one or two important characteristics. The more characteristics one attempts to select for, the slower the progress will be. Genetic progress is slow at the best of times and selection for a long list of characters probably means no progress at all.

It is important to identify goals. The goals of the purebred breeder with an interest in showing are likely to be different from those of the commercial breeder. The following remarks are directed towards commercial production.

Only those characters which are economically important and have a reasonable heritability should be considered.

It may be worth selecting for something which is very important but has a moderately low heritability e.g. twinning rate. Other characters may have a high heritability but may be of little economic importance e.g. Staple length of the fleece.

The following are a few characters which might be considered important and the degree to which they are heritable.

<u>TRAIT</u>	<u>HERITABILITY</u>	
Twinning	low	15%
Lamb mortality	low	10%
Lamb growth rate	moderate	30%
Feed efficiency	moderate	30%
Carcass fat	high	50%
Defects – undershot jaws		
turned in eyelids	high	?
Wooly faces	high	40%

Twinning – low heritability but very important and worth selecting for.

Mortality - very low heritability – it is affected more by other factors and effort should be directed to management to bring about improvement.

Growth rate – can be measured and has moderate heritability – worth selecting for.  
Faster growing lambs tend to have better feed efficiency.

Carcass fat – difficult to measure and therefore difficult to select against. Important and has high heritability.

Defects – easily corrected because of high heritability. Defects tend to be more common in cases of inbreeding.

Wooly faces – may not seem important but clean faced sheep tend to be more productive.

Related characters – these are often referred to as correlations. This means selection for one character results in a change in another. For example, by selecting for fast growing lambs there tends to be an improvement in feed efficiency. The amount of wool on the face tends to be negatively correlated with lambing percentage i.e. selection for clean faced sheep leads to improvement in reproductive performance of ewes.

### **What to select for:**

I would emphasize two characteristics in selecting replacements as follow:

- 1) Twinning – lambing percentage
- 2) Growth rate of lambs

By ignoring other characteristics does not mean they will deteriorate – they will likely remain the same where no selection is practiced for or against.

### **How to select:**

A recording program such as ROP allows one to use records to identify:

- a) Ewes which consistently produce twins or triplets.
- b) Lambs with above average growth rates.

To compare lambs, their weights need to be corrected to a standard age and for the type of rearing, i.e. single vs. twin and age of the ewe. Correction for sex is less important because one is either selecting the best ewe lambs or the best ram lambs.

Without these corrections, the older single lambs from mature ewes will appear bigger and therefore probably better. Selection should be among the fastest growing twin lambs from ewes with records of producing twins. This should be applied to both ewe lambs and ram lambs. When selecting ram lambs only the very best should be kept.

### **Selection for confirmation:**

This is the most controversial topic. Conformation usually means blockiness and selection for this type of conformation is selection for fat. To quote one New Zealand authority:

“Farmers should forget about conformation and should place emphasis on characteristics of greater importance.”

The above conclusion was based on the finding that carcasses from lambs of “blocky” conformation contained 25% more fat, and the leg as a percentage of the carcass was 6% less compared to lambs of “leggy” conformation.

### **Conclusion:**

- 1) Cull ewes for factors which will affect their future potential production.
- 2) In selecting lambs, identify your goals.
- 3) Select for a small number of characteristics.
- 4) Maintain your goals – be persistent – do not keep changing direction.
- 5) Do not waste effort selecting for characteristics which have a low heritability or are not important economically.
- 6) Those characteristics which have a low heritability can often be improved by other means such as management.