

# Choosing a bloodline source

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Merino bloodline results are represented in Primefact 700, *Merino bloodlines: the comparisons 1996–2006*. Throughout this publication it will be referred to as Primefact 700.

## Introduction

The following five steps, in conjunction with the latest Merino bloodline comparison results, will help a commercial wool producer to efficiently identify a ram source that will maximise profitability.

### Step 1: Your flock breeding objective

Firstly, set your commercial flock's long-term breeding objective. Fleece weight, fibre diameter

and body weight commonly dominate the emphasis that is placed on the range of traits in a breeding objective, due to their influence on profitability.

The 'fleece weight – fibre diameter' component of the objective can be a production target or an economic statement.

- **Production target:** for example, 'I wish to increase fleece weight by 10% while maintaining my flock's current fibre diameter and body weight'.
- **Economic statement:** for example, 'based on a 12% micron premium for finer wool, I will place appropriate emphasis on reducing fibre diameter and increasing fleece weight and body weight'.

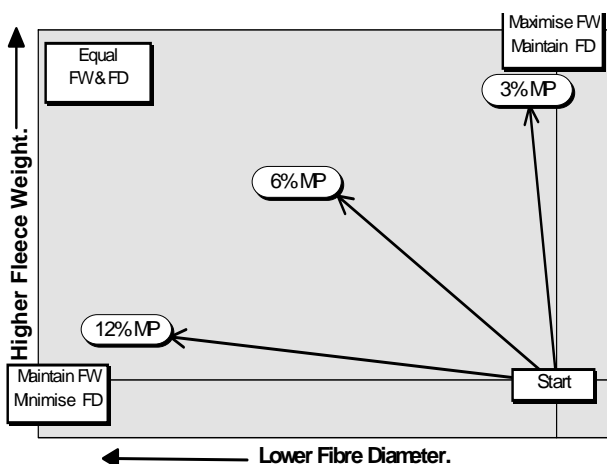
Understanding the relationships between the two forms of objectives is critical if the breeding objective is going to accurately reflect your aspirations.

For further information, please refer to the box below.

### The production and market relationship

The graph below shows the general relationship between a production target objective and an economic-based objective. The three options shown are examples of the continuous range of objectives that breeders commonly choose.

**Fig 1. Basic breeding objective options**



Each option describes both a production direction that a breeder may feel is the 'way to go' and a relative market value for fleece weight and fibre diameter (micron premium – MP).

For example, in the graph, the '3% MP' option describes the target breeding objective, 'I want to maximise the production of fleece weight while maintaining fibre diameter', and also the market-based breeding objective, 'I feel that the wool market value for 1 kg of my wool at 1000 cents will increase in price by 30 cents (i.e. 3%) with a 1 micron reduction in fibre diameter'.

Breeders need to understand the basis for and the outcome of their breeding objective, as opposed to merely having one – often inherited or provided by someone else. Understanding both the performance outcome and the type of market you consider will be in place in the future is critical to this understanding.



## Step 2: Benchmark performance

Establish your current bloodline's performance relative to other bloodlines; that is, benchmark its performance. Relate this performance to your flock's breeding objective, and identify if there are other bloodlines that match your objective. If there are suitable bloodlines, make a 'short list' of options that will be the basis of your further considerations in steps 3, 4 and 5.

Benchmarking can be effectively carried out for either a production or economic-based breeding objective.

- **Benchmarking a production objective:**  
Find your current bloodline in Table 1 ([Primefact 700](#)) and use its code to locate the bloodline on Figures 2a and 2b. **Do not** use your flock's on-farm fleece weight and fibre diameter performance to position your flock onto Figure 2. Your on-farm environment will be different to the 'average' wether comparison environment used to gain the results, which are based on comparisons made across Australia.
- **Benchmarking an economic objective:**  
To benchmark your bloodline's economic performance, use the calculated gross margin if it matches your objective. A five-year price average (2002/03 to 2006/07) was used to calculate the gross margins, refer to Table 1 and Figures 3a and 3b of Primefact 700.  
Three additional markets (2003, median and 2006) were also graphed in Figures 5, 6 and 7 of Primefact 700.

If your objective is significantly different from the objective described by the gross margins provided, you will need to calculate a gross margin using performance results in Table 1 of Primefact 700. See [how to calculate your gross margin](#) on page 3 of this Primefact.

## Step 3: Consider all traits

You must consider your flock's long-term breeding objective for all traits if you are to make a sound choice of bloodline. Although fleece weight and fibre diameter will dominate in most breeding objectives, other traits will also affect your choice of bloodlines. For example, if body weight and additional wool quality traits are in your breeding objective and were not included in the benchmarking process, they now need to be considered. It is important that the influence of these traits on choosing a bloodline source takes account of their relative emphasis in the objective.

Economic benchmarking has an advantage when a large number of traits are being considered. The relative economic values given to the traits in the breeding objective allow all traits in the results to be

accurately balanced for each bloodline. Variables such as the effects of body weight on stocking rate can also be accurately accounted for by the gross margin calculation.

When all traits are considered, bloodlines that were short-listed in step 2 and are now shown to be significantly poorer performers can be dropped from further consideration.

Traits in your objective not listed in Table 1 of Primefact 700, such as fleece rot resistance, reproductive rate and conformation, will also need to be considered. You need to research the relative performance for these traits for your short-listed bloodlines. If you find that a short-listed bloodline does not have satisfactory performance for a trait, this bloodline will need to be dropped from the short list.

It is critical that you keep in mind the relative emphasis of additional traits if you are to strike the correct balance for your breeding objective. For example, do not drop a bloodline from your short list that is a standout performer for all the high emphasis traits in your breeding objective just because the bloodline is a little below the best performers for a low emphasis trait.

## Step 4: Performance progress

The short-listed bloodlines that remain after steps 2 and 3 should be investigated further. Their breeding objectives, selection practices and genetic progress in the last 10 years and coming 10 years may alter their performance relative to the results presented in Table 1 of Primefact 700. There is a five to 10 year lag between the bloodline's current performance and performance in these results.

Discuss, with a representative from each of the bloodlines that remain on your shortlist, the results from their own performance monitoring and their bloodline's likely rate of progress in future. Without this information, it will be difficult to adjust the performance of results in Table 1 of Primefact 700 to account for the breeding progress that some bloodlines will be making.

Each bloodline's performance monitoring system should be able to show their last 10 years' progress. The likely rate of progress defined by each bloodline's breeding objective will detail the change in performance that can be expected in the next 10 years of production. Based on your best estimate of changes in bloodline performance, reposition the short-listed bloodlines and recalculate economic performance.

## How to calculate your gross margin to match your breeding objective

1. Calculate the bloodline production levels for clean fleece weight, fibre diameter and body weight, using the overall means for traits and the deviations shown in Table 1 of [Primefact 700](#).
2. Calculate the price per kg of wool for each appropriate bloodline according to the bloodline performance levels for diameter, style, length, colour and tenderness.
3. Calculate whole fleece values by allowing, for example, 20% of fleece wool to be classed into non-fleece lines (5% bellies and locks and 15% skirtings). The value of wool can be based on prices and premiums for a relevant period of the market (for example, AWI Wool Cheque [www.woolcheque.com.au](http://www.woolcheque.com.au)), or your prediction of future values for the market on which your breeding objective is based.
4. Calculate income per wether for each bloodline as the product of clean fleece weight and adjusted prices, less levies and wool selling charges.
5. Calculate variable costs per wether to account for shearing, crutching, jetting, dipping, drenching and the cost of wether replacements. For additional information on livestock gross margins, refer to <http://www.agric.nsw.gov.au/reader/livebud>
6. Calculate gross margins per head as the difference between net income and variable costs. Convert these to a common basis, a dry sheep equivalent (DSE) rating for each bloodline, using a 45 kg wether base, as:  
$$\text{DSE} = (\text{body weight}/45)^{0.73}$$

### Step 5: Constraints

Buying rams from a bloodline identified by the process in steps 2, 3 and 4 must be practical. Therefore, you should choose the best of the bloodlines left on your short list after Step 4, and ensure that they are a practical option.

The following are some of the practical constraints that need to be considered:

- the price of rams
- the availability of rams at the stud
- the time of year rams are available versus your flock needs
- distance travelled to select rams and/or transport them to your flock
- the availability of relevant information to help you select rams.

These constraints will often influence the selection of a ram source, particularly when more than one bloodline are equally the best, based on the traits in your breeding objective.

### The outcome

The five steps above allow the choice of a bloodline to be made efficiently and effectively. They commonly allow the many and varied bloodlines that are available in the marketplace to be reduced to a single best option that a breeder can feel confident in.

The value of a breeder completing or being a part of the five-step process is that they will have a clear understanding of the issues that might cause them to reconsider their bloodline choice.

### Further information

To make the best use of this information, producers should consider the details on the inside cover of the bloodline performance folder and the additional information in the folder. If you require further information, contact the NSW Department of Primary Industries Sheep & Wool Officer, Sally Martin: ph (02) 6382 1077; fax (02) 6382 2228; email [sally.martin@dpi.nsw.gov.au](mailto:sally.martin@dpi.nsw.gov.au). Alternatively, you can contact Advanced Breeding Services, Allan Casey: ph (02) 6391 3812; fax (02) 6391 3922; email [abs@dpi.nsw.gov.au](mailto:abs@dpi.nsw.gov.au); or visit [www.merinobloodlines.com.au](http://www.merinobloodlines.com.au)

### Acknowledgement

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