



Comparing rams or ram sources on your farm

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Why conduct an on-farm ram comparison?

An on-farm ram comparison is designed to improve your ability, as a commercial sheep producer, to confirm the suitability of a ram source. It does this by benchmarking your current ram source against one or more other ram sources of your choice (for example ram sources identified as a result of participation in a wether or ewe trial). Or you may wish to compare individual rams that you are currently using or have just purchased.

Well-run on-farm ram comparisons can provide valuable information on the genetic performance of your current ram source compared to other ram sources. This will allow you to determine the potential gain from changing to another ram source. However, there are many issues to consider, including compatibility of the ram source's breeding objective, difference in genetic merit, rate of genetic gain being achieved, and so on.

This document aims to provide sheep breeders with guidelines on how to obtain valid comparisons of different ram sources, or individual rams, under your farm conditions.

The pros and cons of an on-farm ram source comparison

Effectively you are conducting a progeny test of a ram or a group of rams representing a ram source. Progeny testing uses the relative merit of the progeny to assess the breeding value of the sire(s). It is possible to establish a system of progeny tests over time so that you can compare newly purchased rams with those used in previous years (contact your Department of Agriculture Western Australia (DAWA) Sheep Genetics Team; contacts given below).

Advantages:

- An accurate evaluation of the performance of other ram sources with your current ram source's performance.
- Environmental effects are minimized by comparing the performance of ram sources under similar conditions on your farm.

- You can regularly evaluate the sheep involved.
- Can be used to assess traits not evaluated by wether trials such as ram fertility and lamb performance.

Limitations:

- The number of ram sources that can be tested is limited by on-farm resources and capital available for purchase of test ram teams.
- There is a risk of introducing disease with introduced rams. You could consider the possibility and practicality of using artificial insemination instead of natural mating.
- The time lag in obtaining the information is typically two years for wool and three to four years for reproduction rate, which is relatively short in breeding time frames.

How to make an on-farm ram comparison

The procedure is similar for comparison of individual rams and for teams of rams. The key design features are:

- Identify potential ram sources from the Western Australian combined wether trial or New South Wales bloodline comparisons:

can you identify the performance of your current ram source relative to other ram sources in the Western Australian combined analysis of wether trials or in the New South Wales bloodline analysis?

if yes, *how does your ram source compare to other ram sources for wool production?*

identify other bloodlines that perform better than your own ram source;

if no, *is there any other information available which can guide you?*

- For ram source comparisons, the same standard of ram should be selected from each source. (Use the

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same standard you would normally set to purchase rams to use in your flock).

- A minimum of five rams from each ram source must be used for comparison of ram sources.
- The rams must be syndicate mated to ewes of equivalent merit - that is, a similar standard and age profile in each mating group. The ewes must be split randomly into the ram source mating groups by drafting the mob through a race and taking one for each group in turn (simply counting the ewes out a gate is not a satisfactory method of random selection). The number of animals of each age group and class must be the same in each mating group. Ewes must be identified with easily read and durable tags or brands.
- A minimum of 20 progeny from each ram, or 100 progeny from each ram source mating group, are required for evaluation. As a guide 130 to 150 ewes per ram source should be regarded as a minimum for accuracy (the actual minimum number depends on the anticipated weaning rate). If the wether lambs are sold you will need to double the number of ewes mated. Aim to keep the mating groups in the same condition score when not running as one mob. The total number of ewes for all groups must be manageable with the available farm resources (a small paddock for each mating group at joining and lambing time, sufficient larger paddocks to run the combined mob outside mating and lambing periods).

There may be other options for running the boxed mob, depending on your situation. To discuss potential options, contact the DAWA Sheep Genetics Team.

- Draft ewes into mating groups and run separately for the duration of mating. After mating, box mating groups and run as one mob through pregnancy until lambing. Before lambing begins draft the ewes into mating groups and manage them separately until marking. At marking tag the lambs according to the mating group.
- Run them together as one mob from lamb tagging until assessment is completed (usually after hogget shearing if benchmarked for wool production). Ewes and wethers can be run in separate groups. Do not cull any progeny unless to alleviate suffering. Culling some progeny before assessment may distort the results. Record any such culling against the sire(s).
- Animals to be assessed must be bred on farm. Progeny can be assessed for any desired trait - in general, the more the better. A basic starting point is the traits in your breeding objective, with other traits added as desired. The basic records to collect would normally include:

Reproduction rate (lambs weaned to ewes joined).

Number of progeny culled (record reasons, including pigmentation and conformation).

Hogget liveweight at shearing.

Hogget greasy fleece weight and bin class.

Hogget fleece measurements from a fleece sample (yield, fibre diameter, and so on). Keep samples from sexes separate within each progeny group. You can either:

measure each midside sample separately and average the measurements, or

measure a representative sample from the bulked fleece samples. In this case the samples must be thoroughly mixed and subsampled to provide a sample representative of the average of the group.

As well as the procedures above, additional information can be obtained if wool from the different groups is classed, pressed into separate bales, and each bale tested separately. This can also give an indication of the performance of the different groups.

All progeny from evaluation matings must be measured. Some measurements may be made on samples of the mating group rather than the whole group, in which case accuracy will be reduced. The DAWA Sheep Genetics Team can assist in generating an accurate analysis of your data (see below).

How to increase accuracy

- Avoid using maiden ewes because of poorer fertility and mothering ability.
- Minimise differences in nutrition between ewe groups during joining and lambing.
- Manage weaners at an acceptable nutritional level.
- Shear lambs after weaning to standardise the wool growth to hogget shearing.
- Minimise the spread in lambing time.

How confident can I be in the results?

Most comparisons suffer from inaccuracies caused by factors such as:

- Range in birth dates.
- No allowance for singles and twins.
- Variations in worm burdens in lambing paddocks.
- Accidental deaths due to disease.
- Other chance environmental effects.

Small differences (three or four per cent) between groups may not be real (significant) as they may be due to one or more of the above factors that you cannot control.

The number of progeny per ram, the number of rams per ram source, and the level of difference to be detected need to be considered when comparing groups of rams.

Small numbers of progeny per ram can affect accuracy but a reasonable practical minimum is 20 progeny. Increasing this minimum has little effect on increasing accuracy.

At least five rams per ram source should be mated to produce at least 100 progeny. This will allow differences between progeny groups of five per cent or greater in fibre diameter and 10 per cent or greater for fleece weight to be identified with reasonable confidence that the difference between ram sources is real. When reproduction rate is considered then large numbers of ewe progeny are required to get an accurate indication of genetic differences. However, a minimum of 100 ewes, or 50 ewes that will be assessed over two lambing seasons, is considered to be a reasonable and practical number per ram source.

When comparing small numbers of rams (as in using a small sample of the ram source; say less than 10) it is vital to select the rams in a fair and unbiased way.

What is the real genetic difference between the ram sources?

Since you would normally use ewes from your current ram source, the difference between progeny groups will generally be only half the difference between the ram

sources run in your environment. For example, if you run sheep based on ram source A and wish to compare this with ram source B, you will mate groups of rams from ram source A and B with ewes from ram source A. Progeny groups will then be AA (purebred A) and AB (half ram source A from the ewes, and half ram source B).

Where do I go from here?

Use the Western Australian combined analysis of wether trials available from DAWA, or the merino bloodline performance data, to help identify potential ram sources to test on your farm.

Information from central test sire evaluations such as Yardstick or Merino Superior Sires may also help.

Further resources

Contact the DAWA Sheep Genetics Team through the Narrogin Office (phone 98810222) or the Katanning Office (phone 98213333).

Roberts, G (1997). *The Power of One Ram. An easy guide to progeny testing*. Department of Natural Resources and Environment, Victoria.

