Testing every sheep for objective clip preparation– Guidelines

Background

Within a group of sheep treated similarly, there are individual fleeces ranging in fibre diameter. Typically, the fibre diameter range is about 8µm. This means that in a wether flock with an average fibre diameter of 21µm, you would expect sheep to have fibre diameters ranging from 17µm to 25µm. The individual variation can be greater in a ewe flock which has lambed, with no separation of dry & pregnant ewes. In this case, the range can be as high as 12µm between the finest and the strongest sheep.

However, within a 21µm wether flock, 2/3 of all sheep will have a fibre diameter in the range of 19.4 and 22.6. About 1/6 of all sheep will therefore be below 19.4µm and 1/6 will be above 22.6µm.

Individually testing all sheep, and separating the wool into fibre diameter lines can be profitable in some situations, but not always.

There are a few **golden rules** for understanding when this can work profitably in the wool industry.

1. The wool price for finer lines is unproportionally higher than the wool price for stronger micron lines.

2. Wool prices are generally high.

3. The benefit gained per sheep outweighs the cost of testing.

Wool price for fine lines is higher than the wool price for stronger lines

Consider the table below of wool prices for individual fibre diameter ranges.

Fibre Diameter	19µm	20µm	21µm	22µm	23µm
Wool Price	800c	700c	600c	500c	400c

In this situation, where there is a 100c differential between fibre diameter range, splitting a 21µm wool clip into two different lines will not improve your overall income. Why? By splitting your wool into two lines – a fine and a strong line, you will have a 20µm line and a 22µm line. The 20µm line will achieve 700c in the market place (ie 100c more than the original 21µm). However, the 22µm line will achieve 500c in the market (ie a discount of 100c). In this case, overall, your net wool price will still be 600c, the same as you would have received if you had kept your wool as one line.

Consider the following table:

Fibre Diameter	19μm	20μm	21μm	22μm	23μm
Wool Price	1050	750	550	480	450

A 20μm line of wool is worth 200c more than your original 21μm line of wool, while your 22μm wool will receive a discount of 70c. In this case, the premium (200c) you receive for your wool is higher than the discount (70c) it receives.

Therefore, to achieve gains from clip preparation using objective measurement, you need to ensure the market you wish to sell your wool into is "distorted". That is, the premiums you will receive outweigh the discounts.

Wool prices are high

Even in the above situations, you may not have achieved a high enough gain to justify paying the extra cost for testing. When wool prices are low, even with unequal differentials between fibre diameter ranges, you may still find that it is not economic to test each sheep. While you may return an increase in overall wool price, this increase may not be high enough to pay the testing costs.

The benefit gained per sheep outweighs the cost of testing

In the above examples, we assumed that each sheep cuts the same average fleece weight. Also, we haven't taken account of the extra selling costs, as you now have more than one line of wool.

Fleece Weight

Within a mob, generally speaking, the finer fleeces cut less wool. This is not always the case, but the finer line tends to have less wool, if you split your clip in half.

For example, if we split a 21μm line in half, you would expect two lines of wool, one with an average fibre diameter of 19.8μm, the other with an average fibre diameter of around 22.2μm. Assuming the sheep cut 5kg Greasy Fleece Weight, at 72% yield, you would expect the 19.8μm line to be around 1700kg (for every 1000 sheep) and the 22.2μm line to be around 1850kg. Therefore, of the total wool, less than half will be in the fine line, compared to the strong line.

Wool Prices

For clips less than 19μm, the prices received for this type of wool are extremely volatile. Given the time delay between preparing a line of wool for sale, and actual sale date, you may find the prices used to estimate optimal cut-off points change. Of course, you may delay sale, until you achieve your reserve price, but if cash flow is a problem, you may find your efforts diminished because of market changes.

Staple Strength

In many flocks, the lower micron sheep tend to be those with lower staple strength. This impacts on the decision to prepare your clip objectively. If you use sound wool prices for your prediction, then you may find discounts for tenderness outweigh the premiums you

achieve for having a finer line. In some markets, tender wool achieves a 20% discount over the sound indicator.

Optimal cut-off point

In the second scenario outlined above, we have made an assumption that the best way to class this clip is in half. However, you may find that you achieve a higher profit by classing the clip in another way. For example, using the wool prices given in this situation, you would expect a one line 21μm wool clip to net $18,947.

Splitting the clip into two even lines, (ie above and below 21μm) will return $20,657 (an extra $2,290). In this case, you can make even more profit by using at cut off of 20.6μm. This will return an extra $1,765, or $1.77 per sheep, a slightly higher return.

In some cases, it may be optimal to prepare more than two lines. If you decided to prepare three lines, with cut-offs of 19.7μm and 21.4μm, you would return an extra $2,163, or $2.16 per sheep.

These figures do not take the testing cost into account, therefore, in the first situation, splitting the wool using objective measurement is unlikely to be highly profitable, as it will probably cost around $1.50 per measurement. In the second case, the process becomes more economical.

Classer© – a spreadsheet to predict gains from objective clip preparation

What is Classer©?

Classer© is a spreadsheet program written in 199x by the Mackinnon Project to evaluation decisions to test all sheep and to estimate the optimal cut-off points for objective clip preparation. Classer© can be used to:

1. Evaluate a decision to test all sheep in a mob, by using the mob parameters and current wool prices.

2. Evaluate whether to split the wool into two, three or four lines.

3. Determine the optimal cut-off points for separating wool into two, three or four lines.

Classer© takes into account the additional testing costs for lines of wool, the expected clean fleece weight of the mob, the average fibre diameter of the mob, and the current wool prices.

It then calculates the optimal combination of your wool and gives you the expected net income you would be likely to receive as a consequence of splitting your wool, using objective measurement into a number of lines.

Using Classer©

Inputs

Total number of sheep in the mob - Enter the total number of sheep in the mob to be tested.

Expected average CFW – The clean wool production you expect to achieve from this mob (per head).

Average FD in mob – The expected fibre diameter of the sheep in the mob you wish to test. Obviously, this needs some knowledge of what you expect the fibre diameter to be in the mob to be tested. You can achieve this by randomly sampling around 50 sheep and obtaining a mid-side sample and sending this to a fleece testing laboratory.

Standard Deviation of the FD in the mob – This is the standard deviation of the **average fibre diameter** of the mob. It is NOT the standard deviation of each fibre diameter sample. This can be easily calculated for a group of sheep using standard functions in most spreadsheets, provided the mob has been tested. If the mob has been tested, a standard deviation, based on the mean is calculated. This is generally quite accurate. The standard deviation in the mob is related to the total variation you would expect to see and changes with the average fibre diameter. In general, most flocks have a similar relationship between mean fibre diameter and standard deviation. As mentioned previously, this can be higher if the mob you are considering is a group of ewes where there has been no separation for dry, pregnant, lactating and non-lactating.

Individual testing cost per sheep – Cost per sheep of testing each fleece.

Testing costs for each line of wool that is created - If you create four lines, your testing costs will increase. This is added to the total figure to determine whether or not splitting your wool will be profitable. For smaller lines of wool, the additional income may be reduced by extra testing costs.

Wool tax – The proportion of wool income paid as wool tax. For 2000/2001, this is set at 3%.

Additional selling costs – These are brokerage, and other selling costs. Remember, also that selling smaller lines of wool may have higher selling costs, which can be factored into the calculations.

Wool prices - Based on the average fibre diameter of your mob, you will need to enter clean wool prices for a range of different fibre diameters. This program uses these prices to calculate a quadratic function to estimate clean wool prices. The program relies heavily on this information – so BEWARE. You can achieve spot point of micron clean wool prices through AWEX or for finer fibre diameters, through Andrew Woods, at ICS. You will need to enter a price for each of the micron categories listed. There is a graph showing the wool prices you have entered against their micron category. In general, the more curved this graph, the more profitable the objective clip preparation becomes.

If you are prone to tender wool, it is advisable to conduct different analyses- One with the sound prices, the other with tender prices for the finer micron wool. This gives you a sensitivity analysis of the different alternatives available to you.

RESULTS PAGES

Prices used for calculations - Classer© does not use the exact prices you enter. It uses these prices to generate a cubic function, which is then applied to the actual fibre diameter of each line to generate a price. Unless there are strange aberrations in the market, you will generally find that the prices you entered will be similar (but not exactly equal) to the prices that are used in the program. Large differences between the calculated and actual prices may result in anomalies in the output, and you should treat this accordingly.

One line clip – Classer© gives the average fibre diameter and estimated net income from a one line clip. This is used as the basis for comparisons to the multiple line clips.

Two line clip – The number of fleeces to be classed into the fine and broad line is given, with the estimated average fibre diameter of each line, the total kg CFW in each line, and the estimated price received for each line. The percentage (of kg's) of the clip classed into each line is also given.

The **net return** indicates the total return from classing this line, and takes into account selling and testing costs for both the additional lines created and the individual sheep testing cost.

The **cut-off** provides you with the actual fibre diameter at which you decide to separate your wool. For example a cut-off of 20µm indicates that all wool less than 20µm goes into the fine line, while all wool greater than 20µm goes into the strong line.

Three line clip – The information provided here is the same, although there are now three lines, and two cut-off points are provided. The fine line will be all wool with a fibre diameter less than the lowest cut-off. The medium line will be all wool between the first and second cut-off point. The broad line will be all wool with a fibre diameter higher than the broader cut-off.

Four line clip – The results here are the same as for the three line, clip however, this information is provided for each of the four lines created in the clip.

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Further Information

Questions regarding support for the program can be directed to the Mackinnon Project on 03-9731 2225, or email: mackinnon-info@unimelb.edu.au