CSIRO

# Finewool Newsletter

FINE WOOL PROJECT

**Issue 12**

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CSIRO

PREMIUM QUALITY WOOL COOPERATIVE RESEARCH CENTRE

WOOLMARK

In this Issue:



## Editorial

Welcome to the 12th Fine Wool Project Newsletter. These are busy times for the team working on the Project. Woolmark Company funding for the project finishes in July so we are focussed on trying to deliver the final milestones to the industry before that date. Our major achievement will be to produce a software package that contains all the genetic information that we have collected over the past eight years. This will be presented in such a way, that with a minimum of assistance, breeders can work out their own breeding goals and see for themselves how different selection strategies have the potential to change their flocks over a 10-20 year time frame. More about that in the next Newsletter.

The messages being presented in this issue of the Newsletter relate directly to issues of profitability. For those woolgrowers who are sick of looking at wool prices, Kathy Coelli's report on **1998 in Review** (p.2) will not necessarily be pleasant reading. However, whilst the bad news is obvious, there is some good news to be taken from the figures – if you are a fine or superfine woolgrower. Clearly, those producing wools of finer than 19 microns are in a superior price position than broader wool producers. That is, as long as they have the right genotypes in terms of fleece weight and style. These figures might also provide some stimulus for those breeders who have decided to maintain their micron where it is, to review their goal.

The issue of style is addressed in another report in this newsletter. Clearly style is a trait of significant economic importance for superfine wool growers, and those breeders reviewing where their breeding program is headed should find this information of value.

There is also a report by Kerry Hansford on work by CSIRO Wool Technology on in-shed testing. This is an area of long term interest to many growers, and this report will bring readers up to date with the work being conducted by CSIRO.

Till next time, happy reading.

**Ian Purvis**

## Arding Report

**Dick Farrell, CSIRO Animal Production**

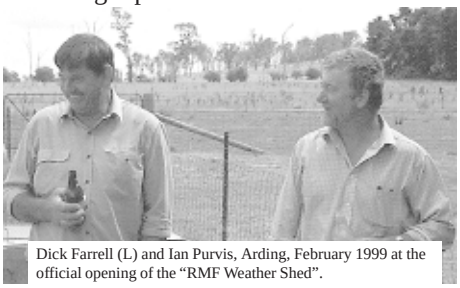
I mentioned in my last report that the wool from the Fine Wool Project was an outstanding clip and we were looking forward to good wool prices. Unfortunately this was not to be. The clip was sold by auction at the August sale in Newcastle and the top price received was 1135c/kg. A good result on the day, but still disappointing. Our top price the year before was 1351c/kg.

Lambing in October 1998 was the last for the Fine Wool Project, and again it was very successful. The lambs thrived for the first couple of months on good short feed, but mulesing, the onset of dry weather and an abundance of tall dry feed caused a slight setback and the lambs didn't do as well as we would have liked. The mean bodyweight at weaning was 16.5kg. At the time of writing Arding has had some good falls of rain so we expect the weaners to grow out very well.

As mentioned in the last report, Arding is in quarantine with footrot. After hoof paring, culling of bad feet and foot bathing with zinc sulphate (recommended by RLPB) it would have been reasonable to expect that we were on top of the problem, considering we had such a mild outbreak. However, at our last inspection in December 1998 footrot was still evident.

We are continuing our eradication program by foot bathing in formalin and foot inspection. Our next inspection is due at the end of March 1999 and we are quietly confident of a clean bill of health.

The Fine Wool Project ewes will not be mated this year. The 1993 and 1996 drop ewes will be culled and sold. The 1994 and 1995 drop ewes will be retained, sampled and shorn in 1999 and in 2000 the 1995 drop ewes only will be measured and shorn. This will then conclude the Fine Wool Project and the Arding report.



Dick Farrell (L) and Ian Purvis, Arding, February 1999 at the official opening of the "RMF Weather Shed".

# 1998 in Review

**Kathy Coelli, Advanced Breeding Services**

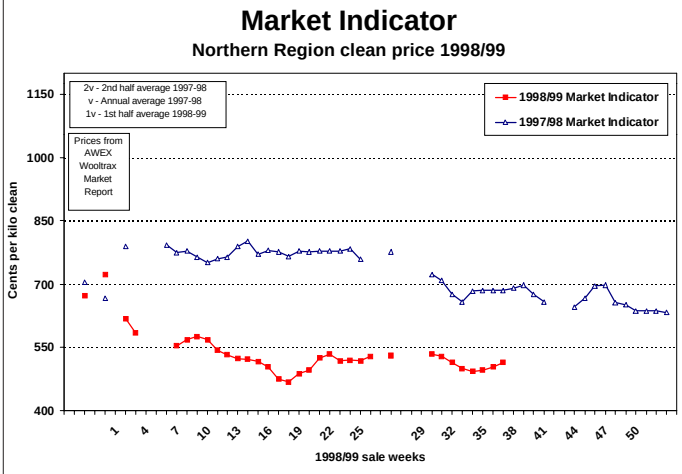
Much has happened during 1998 to occupy wool market headlines other than the auction price of wool. Firstly, the suspension of stockpile sales and the imminent privatisation of Wool International. Secondly, the no-confidence vote at the AWRAP board meeting and its impact on the structure of the wool industry. And thirdly, factors influencing retail demand for wool and global production of wool continue to be prominent.

What about wool prices and premiums and the important implications of these to woolgrowers for setting their breeding objectives? Taking a broader look at wool prices over a number of seasons gives a much more realistic view of the market than spot prices can. By looking at 1998 prices, for example, a number of trends can be observed which may impact on woolgrower's breeding objectives.

This article quotes Northern Region prices for 1998. These prices are based on WOOLTRAX prices from AWEX Weekly Reports.

## Northern Market Indicator

Although there have been occasional short-term price increases over the year, the general price trend for 1998 has been



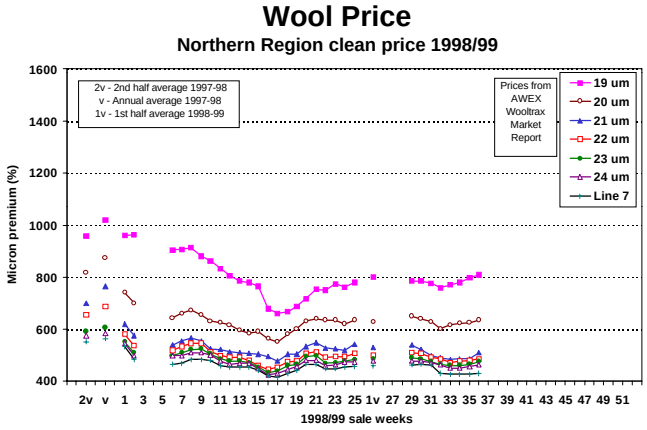

downward. The Market Indicator finished 140 cents lower than the previous year. This overall reduction in prices puts pressure on woolgrowers to improve their breeding program, and other aspects of management, in order to make the most profit from sale of their wool.

## Merino Wool Price Guides

The Merino Micron Price Guides for 1998 are shown in the accompanying graphic next column.

1998 saw price reductions across the board for all Merino wool. The average prices for the second half of the year (denoted by '1v' in the graphic) can by compared with those of the first half of the year ('2v' in the graphic). This comparison shows 19 to 22 micron have fallen by 150 to 200 cents and 23 and 24 micron have fallen 100 cents.

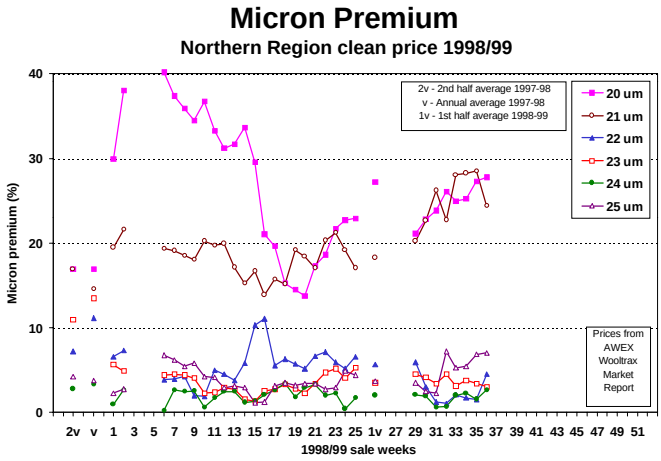
The medium Merino wools (21 and 22 micron) have fallen substantially during 1998 relative to other microns. At the




beginning of the year, the medium wools were mid-way in price between the fine (19 and 20 micron) and broad (23 and 24 micron) wools. By the end of the year, the medium wools were not much higher in price than the broad wools.

## Merino Micron Premiums

As Micron Premiums change constantly, this graphic on first observation seems difficult to read. However, it is important to look for the underlying trends. Again, the average Micron Premiums for the second half of the year can be compared to




the first half of the year. The 20 and 21 Micron Premiums have both increased substantially and are now well above 15%. The 23 to 25 Micron Premiums have all fallen slightly and are now all close to or below 5%. This indicates that at this low point in the wool market, the premiums for medium wools over broad wools are not well supported. However, premiums for fine wool over medium wool are still very substantial, providing strong incentive for medium wool producers to fine up.

Kathy Coelli reporting at the last CSIRO Finewool Field Day at Longford.

On March 19, 1999 the Longford property will go up for auction thus ending the integral role Longford played in the Finewool Project.

# A Progress Report on the use of Sirolan Laserscan for On-farm Testing

**Kerry Hansford, CSIRO Wool Technology**

The Sirolan Laserscan instrument, developed by CSIRO Wool Technology with support from The Woolmark Company, achieved international test method accreditation in 1993. As an aid to the valuation and marketing of sale lots, it has since been used to provide measurements of mean diameter and variation in diameter to growers, brokers and buyers. Processing mills also use the Laserscan in their quality control procedures; however, its application to fleece testing has been limited to the services provided by flock testers.

Unlike other diameter testing devices, the Sirolan Laserscan instrument lends itself to on-farm use as conditioning of the sample is not required. That is, if it is dry one day but humid the next, the Laserscan's measurements will not be greatly affected.

Recognising the opportunity to utilise the technology in a new environment, staff from CSIRO Wool Technology are trialing the Laserscan technology in three sheds, one at Dunkeld, Victoria, one at Armidale, New South Wales and the third at Blackall, Queensland. These trials will fine-tune the system and determine its suitability for use on-farm under a range of different circumstances.

To achieve high quality, repeatable measurements in any environment it is necessary that a representative, clean sample be prepared. Indeed, on-farm use of Laserscan was not previously viable because of these sampling and preparation issues rather than the instrument itself. Peripheral devices designed by Wool Technology to address these sampling and preparation issues are now under development and could be commercially available within 6 to 12 months.

To provide an immediate random sample of the entire fleece, a procedure where fleeces are thrown into a portable weighing/ minicoring device is being evaluated. The mini-cored snippets are then cleaned in a multiple sample, solvent washing system and air-blasted dry ready for measurement.

Note: it is also possible to sample and test mid-sides, however, sample identification and hence throughput is not quite as efficient compared to the testing of samples drawn from the entire fleece.

While the Laserscan instrument is not sensitive to humidity, the temperature should be maintained between 15 and 25°C. To avoid extremes, in most circumstances it is preferable to house the instrument itself in an air-conditioned room which also has the advantage of providing a clean workspace. A final requirement is a fume cupboard to facilitate the safe use of the cleaning solvent. Wool Technology has addressed this issue by producing a purpose-built portable fume cupboard.

In conjunction with the development of the peripheral devices, further work is being conducted to firstly, improve the identification of the fleeces and the samples as they move through the shed, and secondly, ensure ease of access to the information that is generated. Such systems include barcode and transponder (microchip) technology as well as software programs for capturing and utilising the data.

The trials to date have proven that fleece weighing and Laserscan measurement is now feasible in real-time, with the testing system able to keep pace with four (800 sheep), but possibly up to six, shearers. In addition, the trials have shown that results from subsequent core testing correspond well with the diameter categories of bales that comprise Laserscan tested fleeces. However, to maximise the benefits of on-farm testing, it is important that the Laserscan measurements (which now include fibre curvature) and fleece weights are incorporated into breeding and flock management strategies as well as into clip preparation.

Table 1 compares the proportion of wools allocated to each diameter category for a 17µm superfine clip (Dunkeld, Victoria) when classed using traditional procedures and when classed after testing each fleece. By applying current prices to these percentages, a preliminary estimate of the value of testing the entire clip can be made.

**Table 1 Comparison of the Composition of Sale Lots presented for Sale in 1996 (traditional classing) and 1997 (classed on MFD using Sirolan Laserscan) for a Victorian Superfine Clip**

| Diameter Category | 1996 traditional classing | 1997 Laserscan classing |
|---|---|---|
| | % of clip | % of clip |
| 14 µm | 0 | 2 |
| 15 µm | 2 | 9 |
| 16 µm | 9 | 15 |
| 17 µm | 32 | 30 |
| 18 µm | 36 | 26 |
| 19 and 20 µm | 21 | 18 |
| Total | 100 | 100 |

At this stage a full costing of the on-farm testing equipment described above has not been made, nor has a per sample cost been estimated. However, from an economic point of view, the system would be most suited to purchase by flock testing service providers, groups of growers (for example, regional or bloodline groups) or larger enterprises with a number of different properties.

The development of the real time, on-farm fleece testing system is timely because of its potential to aid growers' efforts to meet increasing demands for fine and superfine wools as well as helping breeders to make faster genetic gains through measurements made on the entire ewe flock as well as the rams.

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# Measurement can be used to increase profit in commercial flocks

**Andrew Swan and Laurie Piper, CSIRO Animal Production**

Geneticists have traditionally focussed their attention on methods that increase genetic progress in ram breeding flocks. Perhaps the most important of these methods is the "selection index", which appropriately combines information from the traits which affect returns and costs, depending on the relative importance of each. In fact, one of the main goals of the Fine Wool Project is to use the vast amount of information collected on individual animals to develop selection index procedures which improve the breeding programs used in ram breeding operations. These procedures will be tailored to the needs of individual breeders via the software package referred to in the editorial.

The rationale for this approach is that genetic progress will lead directly to more productive sheep. Commercial wool growers certainly benefit from the measurement and selection programs conducted by ram breeders, because over time they have access to increasingly superior rams. However, what is not quite so clear is whether these commercial growers should measure their own sheep.

The improvement realised by a grower who purchases rams is largely determined by the genetic progress in the ram source. However, measurements made on the commercial ewe flock can be used for selection. The important point here is that the resulting improvements occur in the future. What concerns commercial growers just as much, if not more, is the "here and now". For example, a grower might be faced with the problem of choosing 50% of a group of hogget wethers to keep as wool cutters until 5 or 6 years of age. Which half will produce the highest income over their life in the flock, and how best to choose them?

To answer these questions, we have used a long forgotten method developed in 1978 by one of Australia's pre-eminent geneticists, John James. The method is an extenstion of the selection index approach, and can be used to identify the animals which optimise both future and current gains (the "here and now"). Obviously, when applied to a group of wethers, only the current gains are relevant, but both are considered for ewes.

We applied the method to a group of 48 Fine Wool Project wethers born in 1993. Greasy fleece weight, mean fibre diameter, CV of fibre diameter, and body weight measurements made on the animals as hoggets (10 months) were used to predict lifetime performance. This involved calculating an index value for each wether. The key feature of the index was that a relatively high emphasis was placed on mean fibre diameter.

On the basis of the index values, the wethers were then divided into two groups: high and low predicted lifetime income. Because measurements were available from subsequent shearings up until 5 years of age, we were able to calculate the actual lifetime income. In doing so, we assumed wool prices of $9/kg clean for hogget wool, $8/kg clean for adult wool, and that reducing mean fibre diameter by 1 micron increases wool price by 20% in each case. Market information shows that over the past 5 years, these assumptions are on the conservative side.

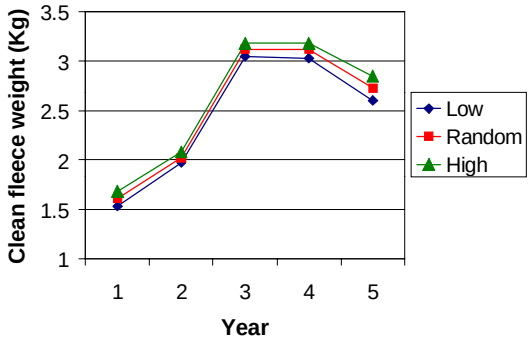
The results are shown in the following table:

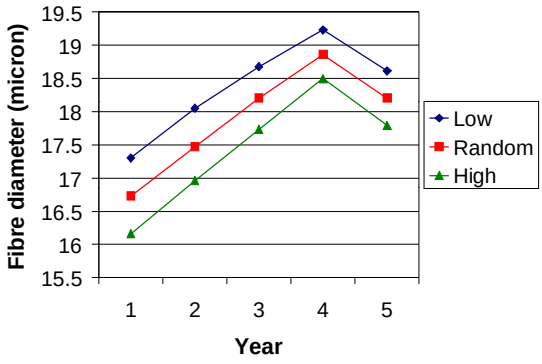
| | Lifetime return per head |
|---|---|
| High income group | $139 |
| Low income group | $111 |
| Random selection | $125 |

The differences are quite substantial, and easily cover the costs of measurement of around $3.50 per head. The return of $125 per head from "random selection" was calculated from the trait averages of the entire group, but gives an indication of what would happen if 50% were chosen at random.

The method traditionally used to make this selection would be to class the animals visually. The effectiveness of visual classing depends on the skill and experience of the classer. Studies over the years have shown that experienced classers can fairly reliably assess fleece weight but are less accurate at assessing fibre diameter. Under a visual classing scenario, it is therefore unlikely that the high income group of animals would be identified reliably, especially when most of the emphasis is on reducing mean fibre diameter.

One important feature of the exercise was that hogget performance was a very reliable indicator of lifetime performance. The graphs below show that the relative performance of the two groups was maintained throughout. For the sake of simplicity, we have not included all of the traits which affect profitability. Other important traits (style for example) can and should be included in the calculations. However, our example clearly demonstrates the value of using measurements in commercial wool enterprises. In the current environment for wool production, the case is quite compelling.




Further information on applying the technique in your flock can be obtained from SELECT Breeding Services (contact Lindsay Brash, ph. 02 6776 1463).

# Analysis of Premiums for Style in the CSIRO Fine Wool Project

**Ian Purvis, CSIRO Animal Production**

As part of the CSIRO Fine Wool Project, analyses of wool sale data have been carried out to estimate the real value of differences in the style of a sale lot of wool. Knowing this information is important so that breeders can put an appropriate emphasis on this trait in their breeding programs.

We have examined the sale lot data from three wool statistical areas over 4 years (1991-1994). The wool statistical areas were chosen to be examples of fine and superfine wool growing regions, and they were :

- Wool Statistical Area N03: New England Tablelands, NSW
- Wool Statistical Area N23: Fine wool area around Yass, Goulburn, Boorowa, NSW
- Wool Statistical Area V21: Fine wool area around Hamilton, Victoria.

From the available sale lots designated as originating from these three areas, we then chose only those lots that satisfied the following conditions:

- From the sale lots coming from the chosen WSA's, brand names (clips) were chosen as being representative of fine/ superfine wool production if the fleece lots from that clip, in that year, averaged (on a weighted basis ) less than 21.6 µm.
- Only those lots described as *adult fleece wools* (on the basis of the AWC type allocated) were included in the analysis.
- From the sale lots representing the chosen brand names, fleece lots with pre-sale measurement of mean fibre diameter greater than 21.6 µm were excluded from the subsequent analyses;
- To reduce typographical errors and exclude lots that did not reflect the typical distribution of types from fine wool areas, lots with prices less than 200¢ per kg clean were excluded from the analysis;
- To attempt to include only those sale lots where prices received reflected the average value of whole fleece production and not selected portions of selected fleeces, all lots receiving prices of greater than 10,000 ¢ per kg clean were excluded from the analysis. This resulted in a maximum of 10 lots being excluded from any WSA in any one year.

These conditions led to us using a data set for the analysis as indicated below in Table 1.

| | | Year | | | |
|---|---|---|---|---|---|
| **Descriptor** | **WSA** | **1991** | **1992** | **1993** | **1994** |
| **Number of Sale Lots** | *N03* | 5797 | 6352 | 6717 | 6246 |
| | *N23* | 8600 | 6843 | 9527 | 10768 |
| | *V21* | 2630 | 1917 | 2695 | 2878 |
| **Mean Fibre Diameter (µm)** | *N03* | 19.0 | 18.7 | 18.6 | 18.7 |
| | *N23* | 19.4 | 19.7 | 19.5 | 19.4 |
| | *V21* | 19.5 | 19.9 | 19.5 | 19.4 |
| **Vegetable Matter %** | *N03* | 1.2 | 1.1 | 1.2 | 0.9 |
| | *N23* | 0.6 | 0.8 | 1.0 | 0.8 |
| | *V21* | 0.4 | 0.4 | 0.5 | 0.4 |
| **Style Grade** | *N03* | 4.3 | 4.2 | 4.2 | 4.2 |
| | *N23* | 4.5 | 4.3 | 4.3 | 4.4 |
| | *V21* | 4.2 | 4.1 | 4.1 | 4.1 |
| **Price ($)** | *N03* | 914.0 | 683.7 | 1095.4 | 1572.7 |
| | *N23* | 792.7 | 630.7 | 862.2 | 1353.7 |
| | *V21* | 809.0 | 599.9 | 943.9 | 1286.5 |

**Table 1. Variation in number of sale lots in Style analysis and average values for traits of interest across years and wool statistical areas**

*Note : Style Grades were coded : Superior (1), Choice(2), Spinners(3), Best T/M(4), Good T/M(5), Average T/M (6), Inferior T/M(7).*

As can be seen from the Table the wools averaged close to Best Topmaking types. Also noticeable is the extreme volatility in price across years.

**Statistical Analyses**

The statistical analysis we conducted to isolate the effect of differences in style took account of all the identifiable influences on price. By including these factors that influence price in one large equation, we can end up with an estimate of the effect of style grade on price ***free from the biasing effect of all other factors***.

**Results:**

In general, the results show the following:

- Premiums for changes in style grade in sale lots from fine and superfine wool flocks are substantial on a per grade basis and show a consistent pattern against micron category. That is, premiums for improved style grades get greater as wools decrease in mean fibre diameter;
- Premiums for an improvement of ***one style grade*** (eg., moving from Best Topmakers to Spinners) averaged approximately **200¢**. However, this ranged from **zero** at 21µm, through to greater than 500¢ for lots less than 17.5µm.
- The differences in premium for style changes between the three regions were smaller than those differences associated with micron category.

These results are currently being extended to include other fine wool growing areas, and to also include more recent years when the AWEX system was introduced.

**Bottom Line:**

These results are highly significant for fine and superfine wool growers. Rewards are certainly there for production of high quality fleeces.

From a ram breeding perspective, the results are also very important. The ***relative*** importance of style premiums in the context of a breeding program will depend on how variable the trait is in a breeding flock, how heritable is the trait, and the relationships between style and other traits of economic importance which are used as selection criteria.

Work is continuing in the CSIRO Fine Wool Project to formally incorporate style and the other additionally measured traits, such as length and strength, into index equations that can be customised for individual breeders. **More about this in the next newsletter.**

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