



Jim & Sue Hore,  
R.D.4, Ranfurly, Otago,  
New Zealand

Phone: + 64 3 444-7703  
Fax: + 64 3 444-7055  
[mail@stonehenge.co.nz](mailto:mail@stonehenge.co.nz)

## FIBRE MEASUREMENT-

### CAN YOU AFFORD NOT TO?

**T**here is nothing new about fibre testing, the first real attempt to introduce electronics in this area began back in 1953. The use of objective measurements may have been viewed with suspicion when it was initially introduced but it has brought the wool industry into line not only with other natural fibres, but more importantly with the processors and manufacturers.

With the introduction of new technology in the form of the OFDA 2000 and its predecessor OFDA 100, technically supported by SGS, each trait with an economic value can now be measured. It can then be used either on its own or with any one or a number of other factors to improve breeding management and keep up with market requirements.

Today on farm testing offered by Pastoral Measurements Ltd. and the OFDA 2000 is now able to give quick and reliable results over a wide range of factors. The important traits that can be objectively measured from a small greasy sample include: mean fibre diameter, standard deviation, coefficient of variation, comfort factor, CEM, curvature, fibre distribution, SD along, bulk and staple length.

All of these traits play an important part in the end product and make up the parameters now being demanded by processors. But they can not be subjectively assessed accurately, if at all. For example; this has been clearly demonstrated by the cause of the 'prickle factor' or comfort factor, as it is now known, and not desired in apparel products. The awareness of the percentage of fibres greater than 30 microns identified by testing has enabled the benefits of producing a softer product by the elimination such fibres.

## ECONOMIC VALUE

Two important traits influencing economic value, given everything else is equal, are micron and style. While style is not objectively assessed, criteria that make up style differences such as SD, CV, curve and bulk can be. To demonstrate the effect on economic value the data from two clips who have used fibre measurement in the management of their clip has been analysed.

## STONEHENGE

Stonehenge is farmed by Jim & Sue Hore and their youngest son Andrew at Patearoa situated in the Maniototo. Here they run a large commercial flock consisting of 6000 ewes run in conjunction with a Stud, breeding Merino and Halfbred Rams.

## WHY TEST?

The Stonehenge clip is known for its stylish, long, white, soft handling wool. Over a number of years the clip had developed a harsh edge but the source was not able to be accurately pin pointed. The aim was to get rid of the stronger edge and more importantly the stock with the undesirable traits.

While the wool from the Stud stock is been tested annually it wasn't until 2000 that the entire commercial ewe flock was put through the ODFA 2000. This was undertaken for four main reasons:

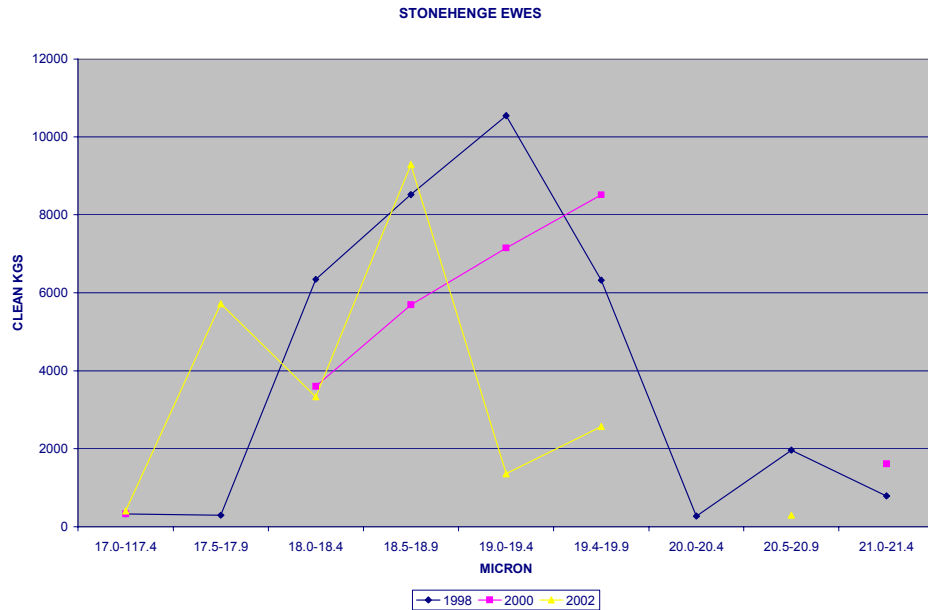
In an effort to improve the commercial flock by eliminating an undesirable trait and

To lower the average micron.

On farm testing was now possible and affordable, and enabled

The entire commercial flock to be tested in a quick and efficient manner. Results were available on the spot saving time and repeated handling.

Fibre testing conducted by Pastoral Measurements Ltd. confirmed there was a portion of the clip in the 21-micron bracket and identified characteristics that could not be accurately assessed subjectively. The resulting data meant a benchmark could be set for a number of factors: fibre diameter, CV, SD, CF and CEM, and in conjunction with visual selection culling could be carried out in a uniform manner. Identification of the individual-offending animals was made and the appropriate action could be made immediately.



**Fig 1:** The ewe fleece micron range from 1998 when the edge (CEM) became apparent, and after the remedial action taken in 2000. Source Sue & Jim Hore.

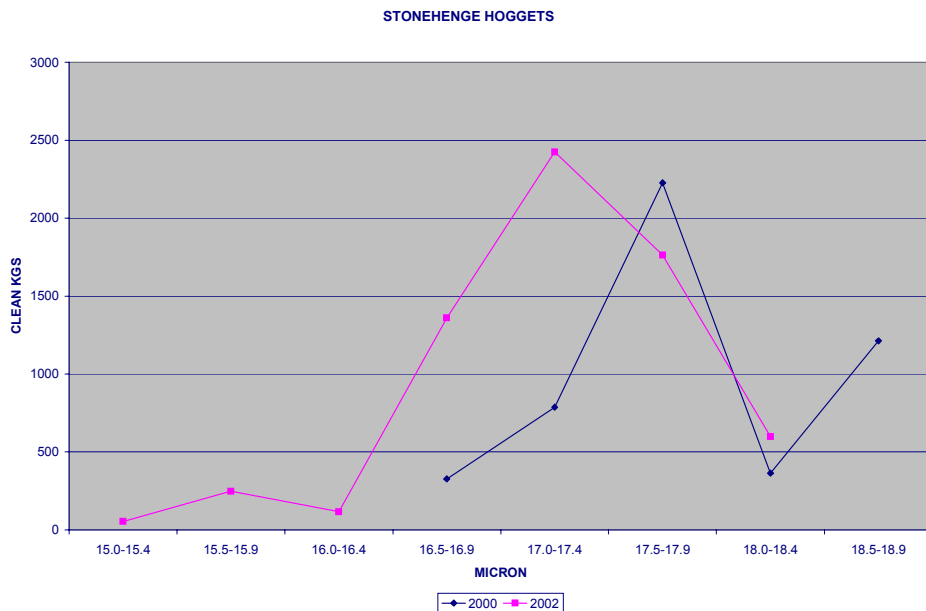
## RESULTS

### To The Clip

The fibre testing in conjunction with a progressive breeding program has resulted in the narrowing of micron range of the clip whilst maintaining all the other characteristics that Stonehenge wool is renowned for.

In the 10 years prior to the testing of the commercial flock the bulk of the ewe clip fell into the 20-micron bracket. By 2002 the average had been shifted to 18 microns, and the stronger end of the clip is no longer present.

In the hogget clip a similar situation has occurred. After averaging in the 18's for many years the average made a significant shift from 17.7 microns in 2000 to 17.2 in 2002.



**Fig 2:** The hogget clip showing the shift in micron. The 18.5+ micron sheep identified in 2000 were culled. Source: Sue & Jim Hore

### Financial Benefits

By applying average auction clean fleece prices from 2002/03 to the 2000 and 2002 ewe and hogget clip data financial gains can be shown.

For example: Say best top making/spinners style F1 style fleece makes up 50% of the clean weight of an average ewe fleece - 3kg and a hogget -2.5kg

In 2000 the averaged ewe F1 style fleece return per head is calculated to be \$21.78 compared to that in 2002 of \$51.

A comparable result is achieved in the hoggets with an average of \$31.98 per head in 2002, up from \$23.72 in 2000.

This quite clearly illustrates a notable financial gain simply by lowering the average micron.



Fig 3: Style F1 price trend history. Source: MNZ & MWI

**Desired Result**

At Stonehenge the use of the test data in conjunction with visual appraisal has greatly assisted in developing the breeding program. Using the ODFA 2000 a desired result in lowering the average micron could be achieved more quickly, within just two seasons in fact, than if it had been done just purely using visual assessment and the introduction of new genetics. As well the undesirable trait had been removed. By 2002 the stronger end of the micron range had been completely eliminated.

In addition the average length has increased with less weight in secondary lines and there have been greater returns for the finer micron.

Style and length have not been issue as the majority of the Stonehenge clip has fitted into the best top making/spinner style categories for many years.

**CURRAGHMORE**

Although style was not an issue for the Stonehenge clip it has certainly played a major part in the development of the Curraghmore clip. When Peter and Pam

Higgins purchased the property, which is located on the Haldon Rd in the McKenzie country, 14 years ago after many years as a heavy machinery contractor, they took over the existing polled merino stock.

**T**hey began a fibre-testing program in 1998 primarily because the average /good top making style 20-21 micron wool which formed the base of their clip at the time returning an average of \$5, was not economically sustainable.

Because of the size of the property increasing stock numbers was never an option. There was no need to buy in stock as in addition to the sweet dry hill country the breeding stock did not have any health issues and had had a good fertility base over the past 14 years, with lambing percentages ranging from the lowest of 103% to a high of 130%. They decided then to breed their way to a finer and improved style of wool clip.

The Higgins's felt they could begin to get better genetics at an earlier stage, after being advised by Donald Burnett to "always breed from young stock" and began with fibre testing the 2th ewes and rams using the Pastoral Measurement mobile laboratory. The result of this testing showed there was a range of 14 to 25 microns in the flock.

In the following year Pastoral Measurements Ltd. tested all ewes with the OFDA 100 prior to shearing. Their woolclasser was also invited to partake in the clip upgrading program by commenting on any poorer style and off line fleeces. As all sheep are number tagged and each fleece identified by this number it was a simple matter to cull the animal.

**(NOTE:** Classing should never be carried on micron results alone. Other basic factors such as style, evenness of length and staple strength are equally as important.)

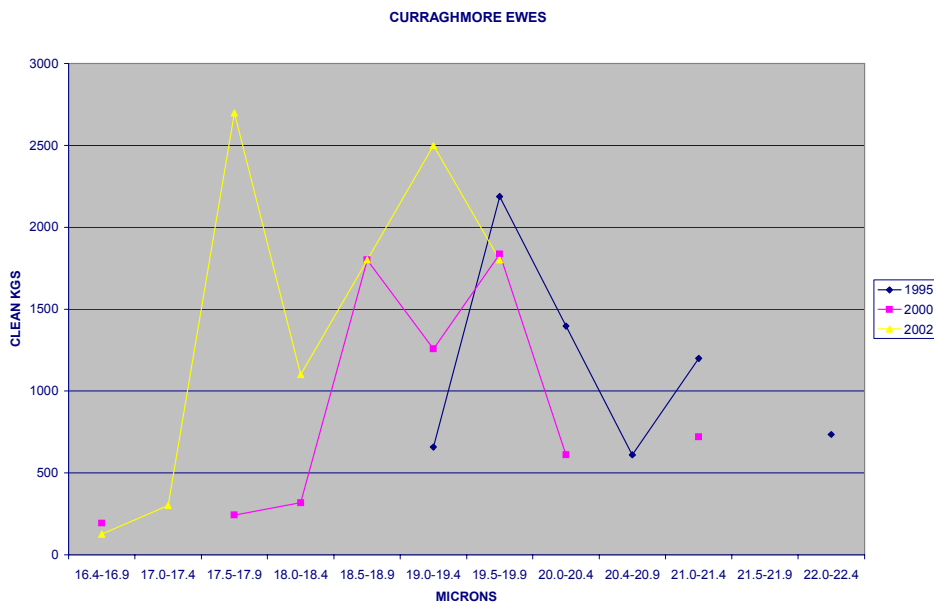
Since 2000 every sheep is tested using the OFDA 2000 at shearing time.

With the decision to change their flock they felt they could get a better selection to decrease the micron base by continuing with basically Merryville bloodlines but changing to horned rams.

**AIMS**

The initial aim was to fine the ewe clip from 20 micron to 18 micron. Consequently the data on micron, CV and CF were the criteria first used for selection and culling decisions.

Now as more information is available and Peter and Pam have a better understanding of the other data available about their clip from the fibre testing also use it where applicable to enhance the style.



**Fig 4:** The Curraghmore ewe clip showing the rate of change. (Source Pam & Peter Higgins.)

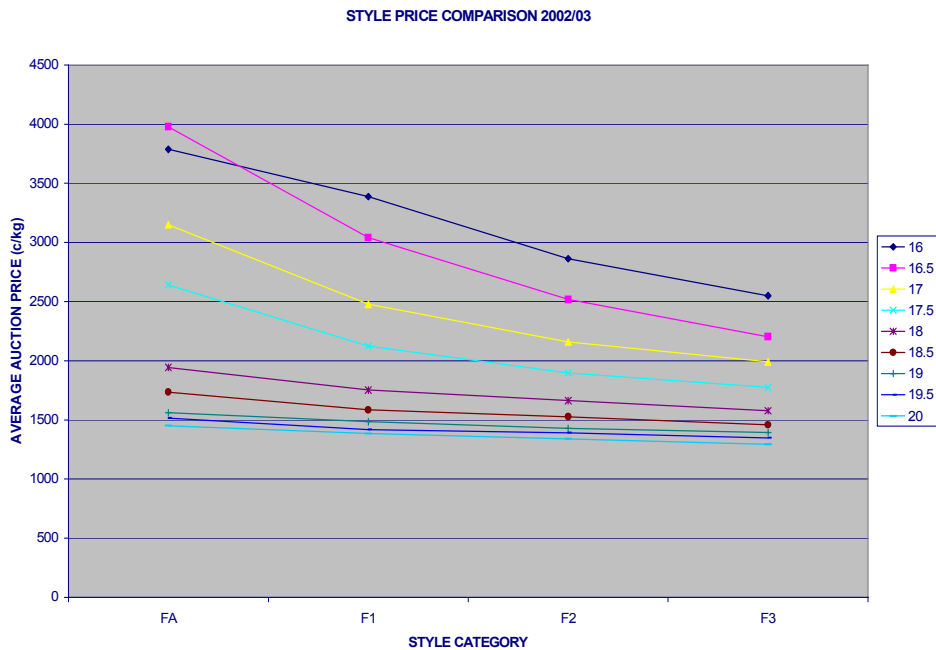
Goals over the past 5-years with regard to style and micron have been readily achieved. Most lines have improved to a spinner type, and the average micron has been substantially reduced to 18 microns. In 1995 there was no ewe wool finer than 19 micron. By 2002 only a very small percentage of the clip was stronger than 19.5.

Recognising the need not just to solely chase the micron, sheep size and constitution were also taken into account. Progress in these areas hasn't been quite so immediate as "we keep shifting the goal posts as we go along" explained Peter.

Fleece weights have also been part of the equation and these have been largely maintained, the average greasy weight dropping from 5kg to just 4.7 kgs.

**ADDED VALUE**

How has all this added value to the clip you might ask. As is illustrated in Fig 5 improving only the style of 20+ micron wool would have little if any financial benefit. The only real option was a shift to a finer micron to increase returns. Even greater gains have been made by also improving the style. There are significant price differentials once the micron falls below 18 microns.



**Fig 5:** Style versus price. Source; MWI and MNZ.

An excellent example of a significant financial benefit is illustrated in the returns of the hogget clip. In 1998 the top line of 18.2 realised just \$6.02c /kg, and in 2002 the 15.5micron line topped the sale selling for \$35/kg greasy.

For the Higgins, coming from a non-farming background fibre testing and the data presented has been a dramatic learning curve for them. Not only have they learnt about their own clip and watched its progress but about merinos in general.

## GAINS

The main gains have been:

- ◆ The better understanding of their merino clip, merinos and the growing of merino wool.
- ◆ Using this information they have improved the genetics of their flock,
- ◆ made huge inroads into the improvement of their clips style
- ◆ lowered the average micron and
- ◆ tightened the range of the micron spread. Important for a smaller sized clip.
- ◆ **the greatest gain** has been in achieving all of the above they have made a marginal operation into a more promising business venture.

## SUMMARY

**T**raditionally over the past ten years there has been a price differential, in general an increase in price as the micron decreases. This trend is not likely to change in the foreseeable future.

At different times there has been appreciable cut off points with regard to price at certain microns in the market and the and in some instances at points of a micron.

It is possible by identifying just one trait such as fibre diameter with very little effort and cost to change the emphasis of your clip into a higher return bracket almost immediately.

During the very first year of testing in the case of the Curraghmore clip, the identification of a bale of wool under 16 microns, just one single factor of the test results, paid for the testing. In addition there is a permanent record for each individual animal and over time a number of identified characteristics have helped in the overall improvement of the flock and clip.

**A**t a time when end user clients demand narrower parameters on not just the micron there is a need for the grower to have as much information on their clip as possible in order to maximise returns.

To keep a tight reign on the future direction of the Stonehenge clip, to maintain flock micron and to assist with adjustments that may be deemed necessary regarding other characteristics, the fibre testing program will be continued indefinitely with the ewe hoggets and 2ths.

Fibre testing will also play a part of Peter and Pam Higgins's long term farming management plan towards a finer and better styled clip.

**D**ata is as valuable as you want to make it. Pastoral Measurements Ltd. has developed a comprehensive program for ranking and setting breeding strategies. This also has the potential for in shed classing by grouping fleece by predetermined parameters.

While it is difficult to put a \$ value on it as each individual grower is unique, the proceeding examples are genuine.

If you are in any doubt what so ever ask yourself if you can afford not to spend time on acquiring knowledge about your clip to improve your financial viability and position.

## REFERENCES

**Peter and Pam Higgins**

**Jim & Sue Hore**

[www.stonehenge.co.nz](http://www.stonehenge.co.nz)

**Pastoral Measurements Ltd.**

[www.fibretest.net](http://www.fibretest.net)

[www.pmlnz.co.nz](http://www.pmlnz.co.nz)

**Meat & Wool Innovation:**

Valuation Data

Statistical Handbooks

Market Indicators

[www.mwi.co.nz](http://www.mwi.co.nz)

**Merino NZ:**

Price Comparisons

[www.nzmerino.co.nz](http://www.nzmerino.co.nz)

**WOOL:** Publication of Massey Wool Association

“Development in wool measurement.” by Dr Alan Edmonds of WRONZ