

Merino bloodlines: The comparisons 1994–2004

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This national Merino bloodline analysis has been made possible with co-funding from Australian Wool Innovation Limited and NSW Department of Primary Industries.

Introduction

The performance differences between many commonly used Merino bloodlines can now be defined. This is the result of the Merino Breeding Group's updated analysis of 58 wether comparisons conducted in NSW, SA, WA, Tasmania, Victoria and Queensland from 1994 to 2004.

The previous analysis was from wether comparisons run between 1989 and 1999. There has been a substantial change in the bloodlines represented in the 1994 to 2004 analysis with 33 new and 38 common bloodlines.

The new bloodlines tend to be finer and have moved the overall mean of the results. This is in line with the Australian Industry, for example fibre diameter has moved from 22.1 μm in 1995 to 20.5 μm in 2004.

Bloodline data used in this analysis has been sourced from wether comparisons that have been run for a minimum of two years (average three years). The bloodlines reported in this publication have had at least three teams evaluated in wether comparisons.

The trends

The performance levels of 166 of the 340 bloodlines involved in wether comparisons were compared for fleece weight, fibre diameter and the other wool quality traits – style, length, colour and staple strength. Those bloodlines excluded (174) were represented by only one team of wethers. The 71 bloodlines reported in this publication have a high to medium accuracy.

Wool production

[Figure 1](#) graphs the bloodline distribution of clean fleece weight and fibre diameter. The 71 high to medium accuracy bloodlines are shown in the dark black triangles and the 95 low accuracy bloodlines are shown in the light circles. The curved line of the best fit through the bloodlines shows a varying trend for different sectors of the industry.

- For the fine wool bloodlines there is a 4 per cent increase in clean fleece weight for an increase of 1 μm in fibre diameter.
- For the medium wool bloodlines there is an increase of 3 per cent in fleece weight per micron.
- For the medium to broad wool bloodlines there is an increase of 2 per cent in fleece weight per micron.



Figure 1. Bloodline trend for Clean Fleece Weight relative to Fibre Diameter - 166 bloodlines

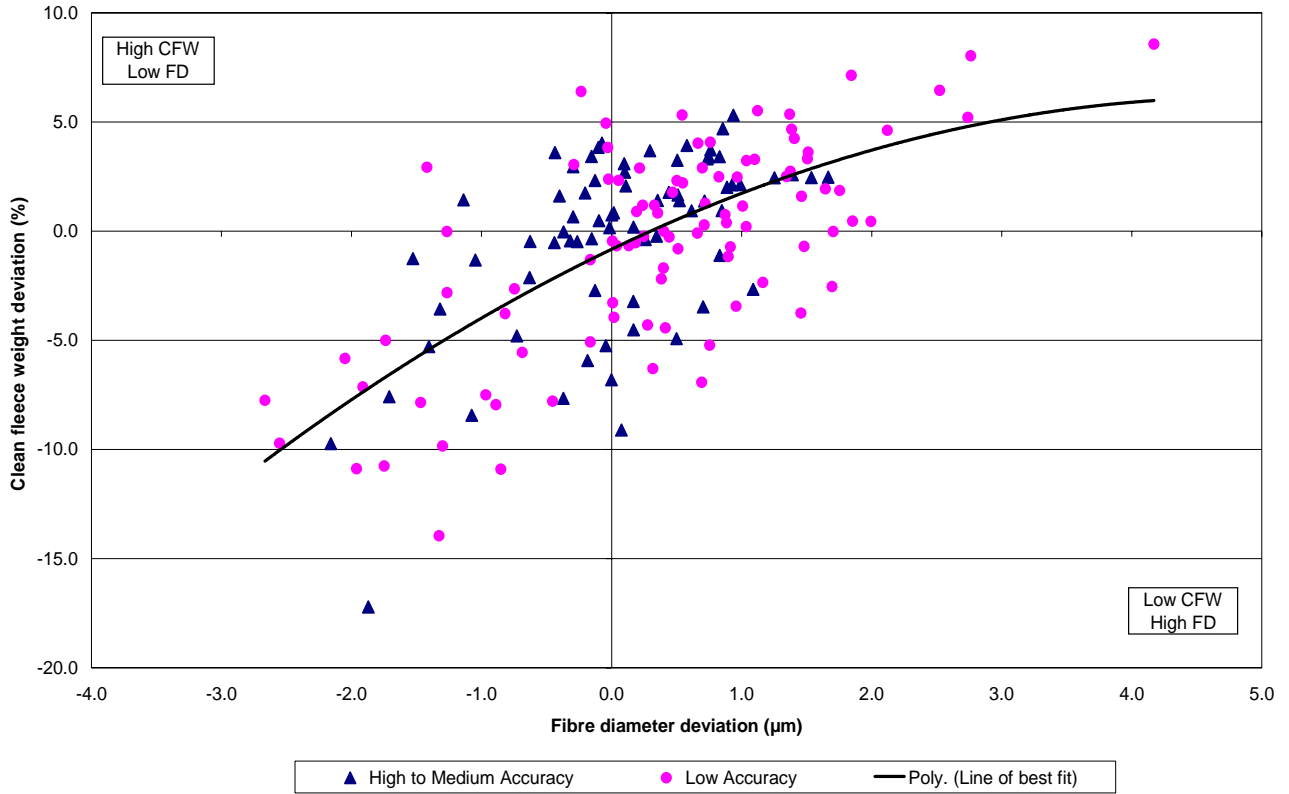


Table 1. Estimated bloodline effects for production traits (deviation from average), components of wool type and gross margin performance for the 71 high–medium accuracy.

Bloodline	Code	GM/DSE (%)	CFW (%)	FD (µm)	YLD (%)	FDST (µm/yr)	CFWST (%/yr)	BWT (%)	Style	Length mm	Colour	Tender	No. of Teams	Acc*
A.M.S	121	-12.9	-6.8	0.00	-4.0	-0.14	-0.9	3.7	2.69	91	1.40	1.14	8	H
AGWEST 95 link (Cranmore Park)	901	-10.1	-9.1	0.08	-2.0	-0.24	-0.1	-0.3	2.52	88	1.31	1.12	4	M
Avenel	31	-0.8	2.1	0.11	-0.7	0.29	1.0	-0.2	2.67	96	1.31	1.36	18	H
Barrackville	308	13.3	-1.3	-1.05	0.1	-0.35	-1.6	-2.6	2.42	90	1.13	1.24	6	H
Billandri	437	-1.3	0.0	-0.37	0.7	0.01	0.0	-1.1	2.83	91	1.33	1.36	25	H
Bogo	435	19.0	1.4	-1.14	-0.5	0.08	-0.2	-2.3	2.44	91	1.22	1.07	5	H
Booabula	128	-4.4	-0.4	0.26	0.3	-0.09	-2.4	0.9	2.61	94	1.36	1.26	3	M
Cardo	612	-5.7	2.4	1.25	1.5	0.42	-2.0	2.7	2.89	90	1.37	1.14	4	M
Cassilis Park	502	-5.5	-3.5	0.70	1.1	0.22	1.2	-1.1	2.63	92	1.40	1.18	4	M
Collinsville	53	-8.3	5.3	0.94	1.7	0.27	0.4	3.1	2.89	111	1.36	1.75	6	H
Concordia	81	-0.7	3.7	0.76	0.2	0.14	-1.0	-0.1	2.52	91	1.37	1.29	6	M
Coromandel Poll	456	-7.6	-5.9	-0.19	-0.7	0.03	0.3	0.0	3.02	92	1.25	1.05	3	M
Corroboree	591	0.8	-3.2	0.17	0.0	0.18	-3.2	-4.1	2.49	94	1.16	1.06	3	M
Cottage Park	134	0.5	3.1	0.10	-0.3	0.13	1.2	-0.1	2.56	90	1.32	1.27	6	H
Cranmore Park	377	-9.6	-5.2	-0.04	-1.9	-0.21	0.1	2.4	2.83	91	1.29	1.04	15	H
Cressbrook	348	13.4	-3.6	-1.32	2.9	-0.09	0.3	-0.3	2.31	91	1.10	1.21	4	M
Egelabra	12	1.7	-0.5	-0.44	-0.4	-0.09	-0.8	-2.1	2.57	91	1.07	1.28	9	H
Eural	23	0.3	0.2	0.17	-0.3	0.16	-1.1	-2.3	2.75	95	1.33	1.24	4	M
Goolgumbra	47	-5.8	1.7	0.51	-0.7	0.13	-0.3	3.3	2.71	96	1.44	1.23	4	M
Grogansworth	294	3.8	3.6	-0.44	1.4	0.11	0.3	0.7	2.46	90	1.09	1.14	5	H
Hazeldean	24	0.4	2.7	0.10	0.5	0.15	0.4	-0.5	2.68	94	1.29	1.31	34	H
Inglewood Estate	34	1.2	1.6	-0.40	-1.7	-0.15	0.5	-0.3	2.61	92	1.28	1.23	7	M
Jaloran	393	-8.2	-1.1	0.83	-0.1	0.37	0.0	3.3	2.85	89	1.30	1.13	4	M

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Table 1. CONTINUED from previous page: Estimated bloodline effects for production traits (deviation from average), components of wool type and gross margin performance.

Bloodline	Code	GMDSE (%)	CFW (%)	FD (µm)	YLD (%)	FDST (µm/yr)	CFWST (%/yr)	BWT (%)	Style	Length mm	Colour	Tender	No. of Teams	Acc*
Jiliby	486	4.3	0.7	-0.30	-1.1	0.67	2.5	-4.9	2.58	90	1.45	1.33	3	M
Kia-Warra	70	-4.4	2.4	1.54	0.8	0.00	1.5	1.0	2.58	95	1.28	1.25	3	M
Kolindale	387	-3.4	1.4	0.35	0.8	0.10	-0.1	1.2	2.77	91	1.32	1.26	9	H
Koonwarra	36	-1.6	-0.5	-0.26	-1.3	-0.28	-0.5	-0.1	2.56	91	1.25	1.23	5	H
Ledgerton	309	17.8	-17.2	-1.87	-2.7	-0.21	-0.2	-5.5	2.38	84	1.06	1.27	3	M
Lewisdale	388	-6.1	2.5	1.66	0.9	0.35	1.7	3.1	2.86	95	1.42	0.99	4	M
Merinotech	576	-8.1	-4.5	0.17	-3.6	0.17	-0.3	1.3	2.81	94	1.32	1.18	6	M
Merrignee	481	-5.5	-7.7	-0.37	-0.8	-0.27	-0.3	-1.2	2.43	83	1.06	1.18	3	M
Merrinjuck	430	7.1	-8.4	-1.08	-0.7	-0.12	0.3	-4.1	2.48	85	1.03	1.44	3	M
Merryville	17	20.7	-7.6	-1.71	-0.5	-0.31	0.0	-2.4	2.32	86	1.13	1.25	19	H
Middle View	234	5.2	-4.8	-0.73	-1.1	-0.01	0.1	-3.5	2.45	87	1.21	1.18	7	H
Monte Verde	441	5.5	3.0	-0.30	-0.4	0.38	-1.2	-3.2	2.80	89	1.31	1.17	3	M
Mungadal	27	-6.5	3.4	0.83	-0.4	0.25	-1.1	4.7	2.61	94	1.53	1.25	3	M
Murray Downs	376	-5.6	-2.7	1.09	-2.1	0.21	0.1	-0.5	2.60	88	1.30	1.02	5	M
Myocum	305	13.5	-5.3	-1.41	0.6	-0.12	0.2	-1.7	2.61	88	1.22	1.31	4	M
Nerstane	11	-0.3	-0.4	-0.32	0.1	-0.06	-0.5	-0.9	2.56	94	1.23	1.13	6	M
One Oak	28	-3.7	1.8	0.44	0.8	0.05	-0.2	2.0	2.62	95	1.33	1.23	5	H
One Oak No 2	221	-1.6	2.3	-0.13	0.4	-0.14	0.1	0.9	2.50	96	1.23	1.19	6	H
Pastora	371	-0.7	-0.5	-0.63	-0.8	0.00	-0.5	2.5	2.62	94	1.24	1.14	8	H
Pemcaw	39	2.4	-2.1	-0.63	-0.3	0.19	1.6	-2.3	2.88	91	1.35	1.23	4	M
Plevna	5	-4.5	0.9	0.62	-1.0	0.16	-0.4	1.7	2.78	93	1.26	1.21	3	M
Pooginook	50	-0.3	3.2	0.51	1.3	0.07	-0.2	0.2	2.54	93	1.33	1.19	25	H
Quailerup	382	-6.2	2.6	1.39	-0.1	0.15	0.7	3.8	2.67	93	1.31	1.05	6	M
Rocklyn	352	-3.7	0.9	0.85	-0.2	-0.04	0.8	0.7	2.52	92	1.28	1.21	6	M
Roseville Park	117	-4.1	-0.2	0.35	-0.6	0.00	-0.3	1.0	2.64	92	1.21	1.25	8	H
Rutherglen	405	-4.1	2.1	0.93	1.0	-0.12	0.7	2.2	2.86	98	1.35	1.04	6	M
San Mateo	404	-2.0	2.1	0.99	-0.7	0.42	1.9	0.7	2.77	87	1.29	0.95	3	M
Severn Park	232	-1.3	0.8	0.02	-0.8	0.15	0.5	-0.9	2.66	93	1.27	1.19	8	H
Stellaroy Park	385	-7.2	-4.9	0.50	-3.1	0.08	1.0	-0.5	2.77	91	1.30	1.19	5	M
Strath Haddon	446	-3.3	4.0	-0.07	1.3	0.16	1.7	1.3	2.78	94	1.29	1.40	3	M
The Grange	526	-5.8	0.7	0.00	-1.3	-0.20	-1.1	2.9	2.67	95	1.32	1.12	7	M
The Yanko	320	-3.9	3.4	-0.15	0.8	0.00	0.2	2.0	2.84	94	1.45	1.34	5	H
Uardry	4	-1.7	1.4	0.71	0.1	0.15	-0.2	-0.8	2.63	93	1.38	1.26	14	H
Wallinar	444	-3.7	3.4	0.75	1.2	0.21	0.4	3.0	2.94	95	1.35	1.10	7	M
Wanganella	22	-2.5	3.3	0.74	1.3	0.26	-0.5	1.2	2.67	94	1.32	1.31	8	H
Wantana	279	0.5	3.7	0.29	-0.8	0.03	-0.3	0.2	2.65	92	1.28	1.21	4	M
Wattle Dale	331	21.6	-1.3	-1.53	-0.5	-0.47	-0.6	-1.6	2.49	88	1.29	1.20	5	M
Westray	9	-2.3	1.4	0.52	-0.9	0.17	1.3	-0.3	2.87	91	1.32	1.33	9	H
Willandra	76	-2.7	3.9	0.58	0.6	-0.01	-0.5	1.9	2.61	93	1.29	1.34	10	H
Willurah	102	-4.4	4.7	0.85	1.2	0.06	-0.7	3.7	2.71	94	1.35	1.28	5	M
Woodpark	90	-5.8	0.2	-0.02	-0.8	-0.10	-1.1	1.7	2.52	91	1.34	1.36	4	M
Woolaroo	303	1.6	1.7	-0.20	0.3	-0.08	-0.3	-0.5	2.52	91	1.19	1.13	7	H
Yalgoo	149	39.9	-9.7	-2.16	0.9	0.01	2.1	-5.2	2.27	86	1.12	1.17	3	M
Yarrowonga	35	1.0	3.8	-0.10	0.3	0.18	0.5	-1.8	2.63	92	1.41	1.42	11	H
Identity Withheld	214	-8.8	2.0	0.89	-1.0	0.11	-0.7	5.5	2.72	96	1.47	1.26	3	M
Identity Withheld	434	-0.3	-2.7	-0.13	-1.4	0.04	-1.0	-1.3	2.46	90	1.02	0.97	6	H
Identity Withheld	1	-2.1	-0.4	-0.15	-0.3	-0.08	-0.3	-0.7	2.68	91	1.40	1.22	18	H
Identity Withheld	398	-0.8	0.5	-0.10	-0.1	-0.11	0.0	0.8	2.50	91	1.03	1.06	7	H
Average		\$31.56	4.24	20.5	71.2	1.07	0.4	49.6	2.52	90.9	1.19	1.13		
Av. Standard error (SE)			1.9	0.39	0.9	0.13	1.3	1.5	0.16	2.5	0.09	0.17		

*Accuracy: H = High M= Moderate

Wool quality

For the 166 bloodlines analysed, the trends between fibre diameter and the other wool quality traits indicate bloodlines of a finer diameter generally have superior style, shorter length and better colour. For staple strength, no trend across fibre diameter was apparent. Full results are displayed in Table 1.

Body weight

Finer bloodlines tended to have lower body weights than their medium wool counterparts. The overall relationship was a 2 per cent increase in bodyweight for a 1 µm increase in fibre diameter. There is an 11 per cent difference in body weight between bloodlines. Remember that body weight is the major controller of meat value in Merino sheep.

The differences

The analysis has removed the variation in environment between trials and years, leaving only genetic variation between the bloodlines. The performance levels of 71 of the 340 bloodlines involved are considered sufficiently accurate to be reported. They appear in [Table 1](#) (pages 2 and 3).

Wool production and quality

[Figure 2](#) graphs the distribution of bloodlines for clean fleece weight and fibre diameter. Each bloodline is represented by a code that can be matched with the bloodline named in [Table 1](#). Table 1 provides detailed results for clean fleece weight, fibre diameter, body weight and some additional wool quality traits. The average performance for all 166 bloodlines (high, medium and low accuracies) is shown at the bottom of [Table 1](#).

The definition of 'traits' in [Table 1](#) is described on the inside cover of the Merino Bloodline Performance folder. An additional trait reported in the analysis, which has not been explained on the inside cover of the Merino Bloodline folder is CFST ("Clean Fleece Weight STability"), which is the annual change in clean fleece weight with age, expressed as a deviation in per cent per year. A positive deviation indicates that the bloodline will become higher in clean fleece weight in older animals.

The returns

[Table 1](#) presents gross margin per dry sheep equivalent (DSE) values for each bloodline. Gross margin values are described as the percentage difference from the average gross margin per DSE. Gross margin values in [Table 1](#) are based on the average Eastern market values for 2000/01 to 2004/05.

The average micron premiums for 2000/01 to 2004/05 are graphed in [Figure 4](#). The 10 year average micron premiums for 1985 to 1994 and 1995 to 2005 are graphed in [Figure 4a](#). See the panel on page 9 for an explanation of micron premiums. Note that within a selling season the micron premium varies for different fibre diameters.

Gross margins for bloodlines show substantial variation, ranging from 40 per cent above average gross margin to 13 per cent below the average return. The production differences of bloodlines have therefore translated into these very significant differences in bloodline profitability.

Contribution from traits

The economic values of all the traits, including the wool quality traits, have been used to calculate the gross margin values.

Fleece weight and fibre diameter in combination dictated the great majority of the economic value of bloodlines. In the 2000 to 2005 period fleece weight and fibre diameter accounted for 91 per cent of the total variation between bloodlines in gross margin.

Of the remaining variation in gross margin, body weight accounted for 6 per cent and the other wool quality traits accounted for the remaining 3 per cent of variation. Since style, staple length and colour all show moderate to high across-flock correlations with fibre diameter, some of the influence of these traits would have been accounted for as diameter effects.

[Figure 3](#) graphs the gross margin per DSE values of bloodlines listed in [Table 1](#), relative to their fibre diameter. The strong relationship between gross margin and fibre diameter is very apparent.

Figure 2. Bloodline Deviations for Clean Fleece Weight and Fibre Diameter

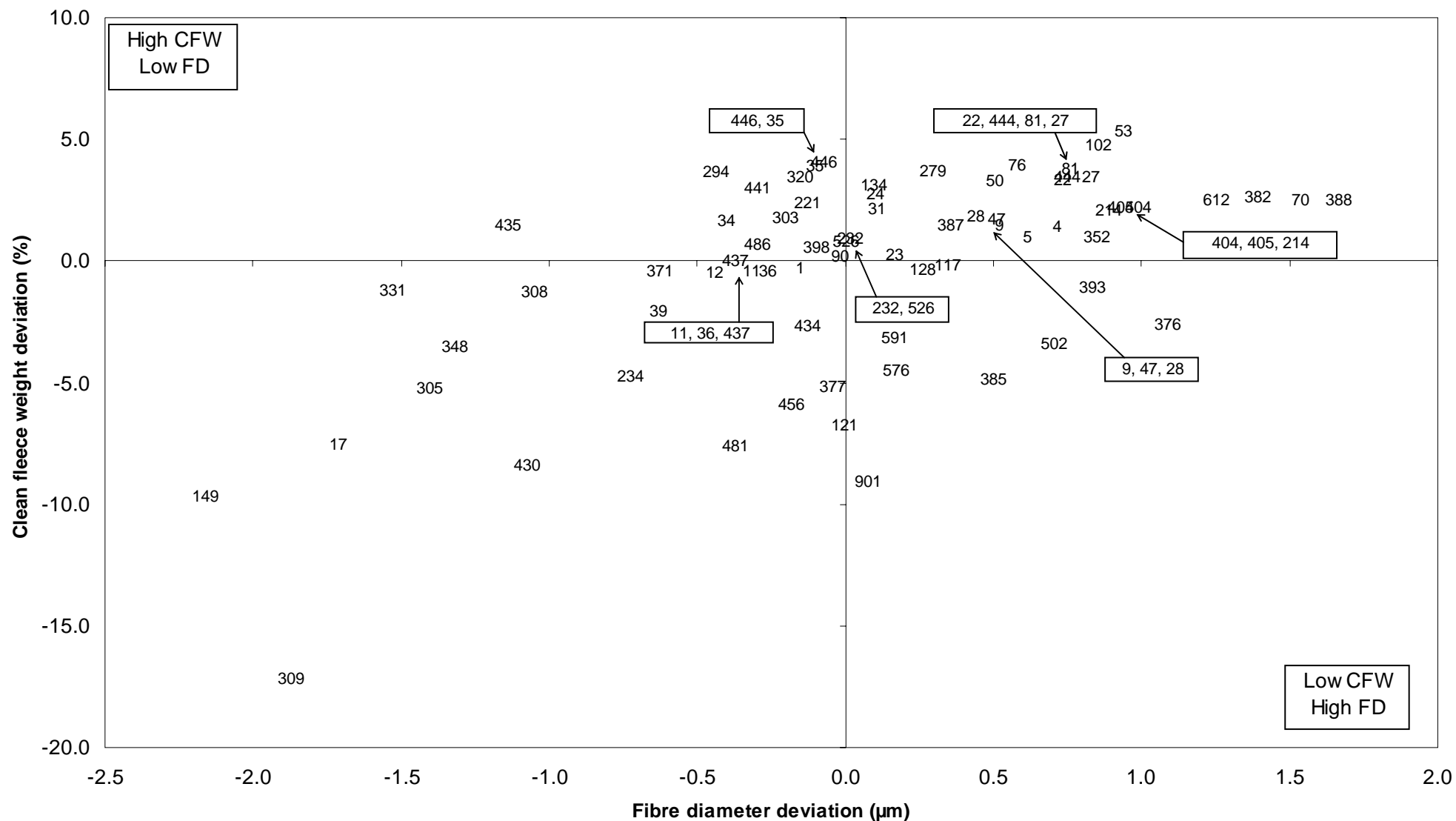


Figure 3. Bloodline deviations for gross margin per DSE for 2000-05 relative to fibre diameter

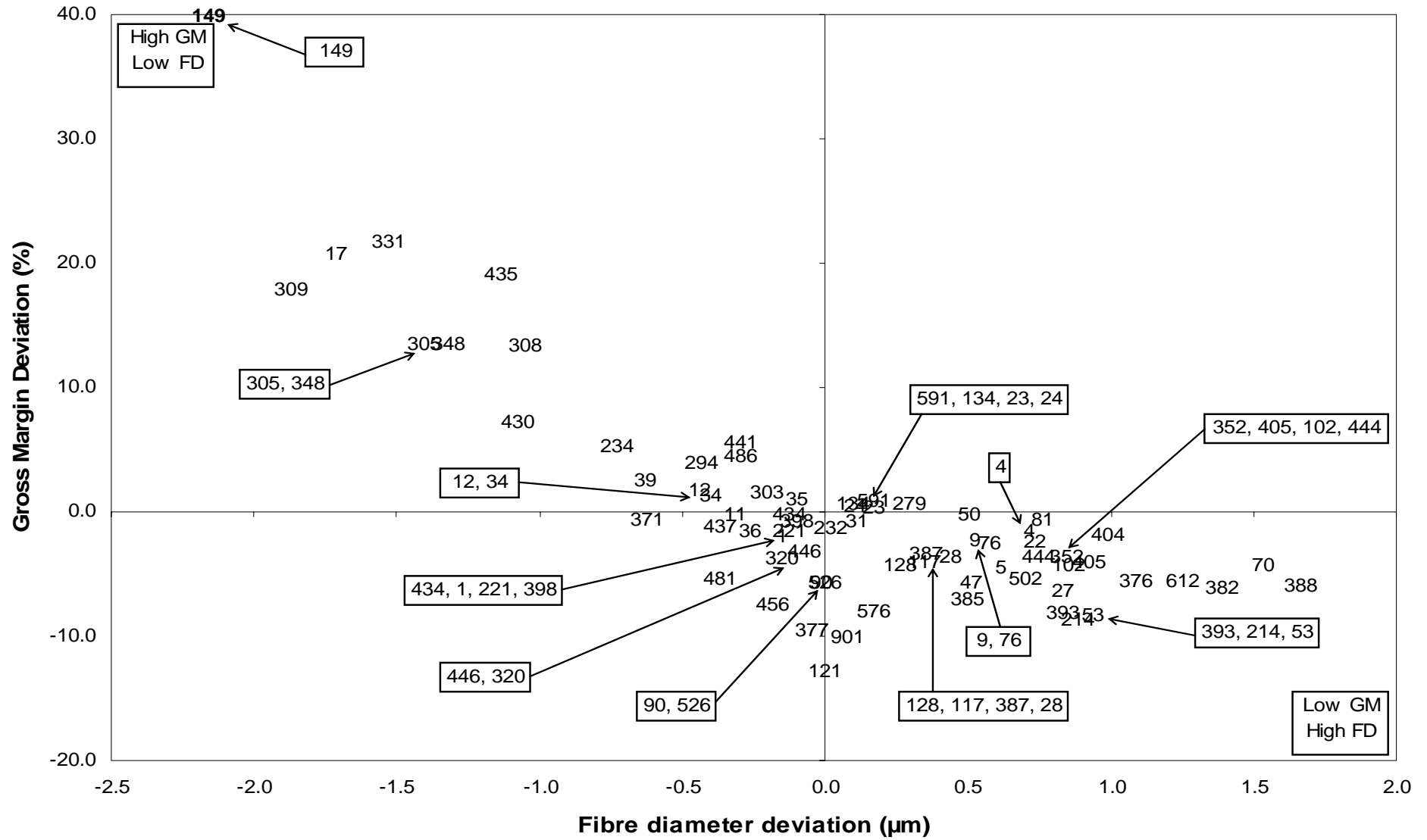


Figure 4. Micron Premiums from 2000 to 2005

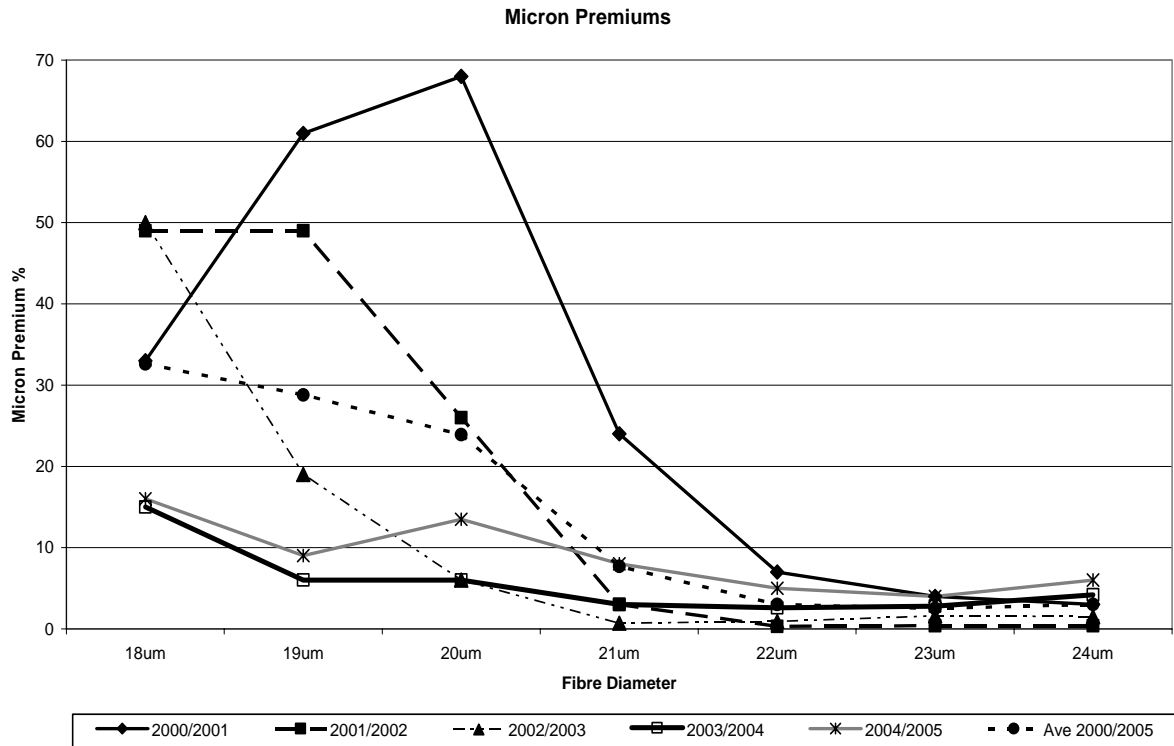
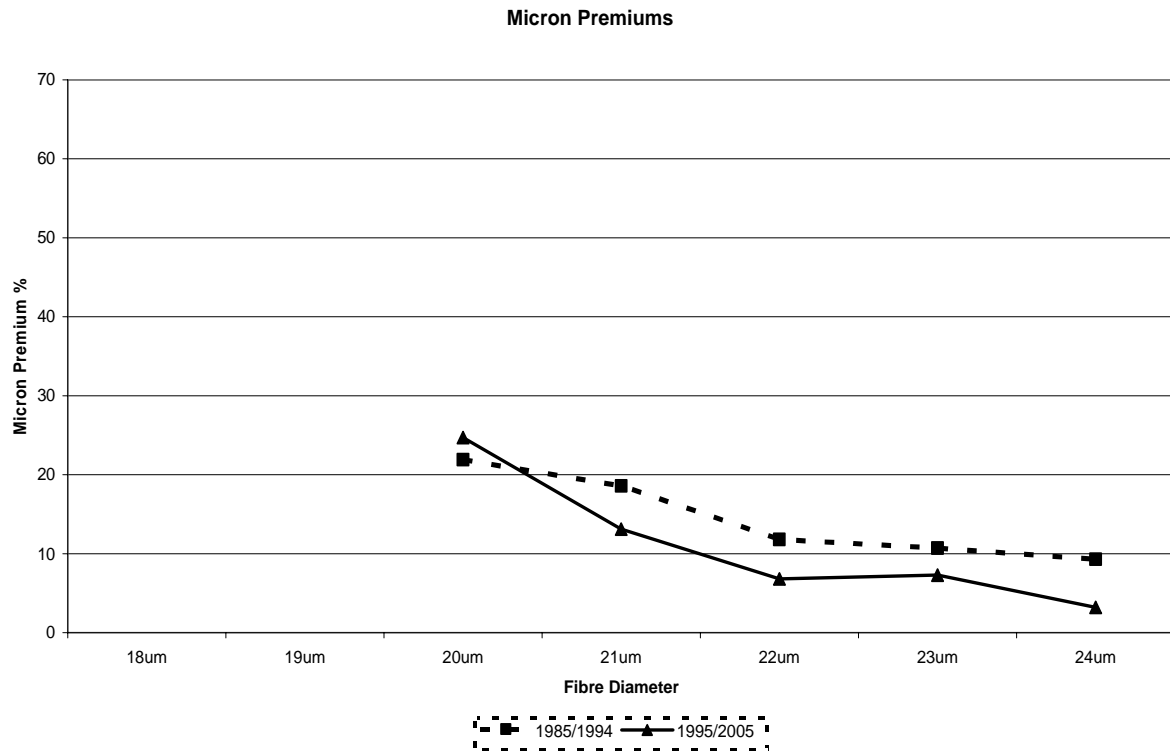


Figure 4a. 10 year average Micron Premiums for 1985 to 1994 and 1995 to 2005



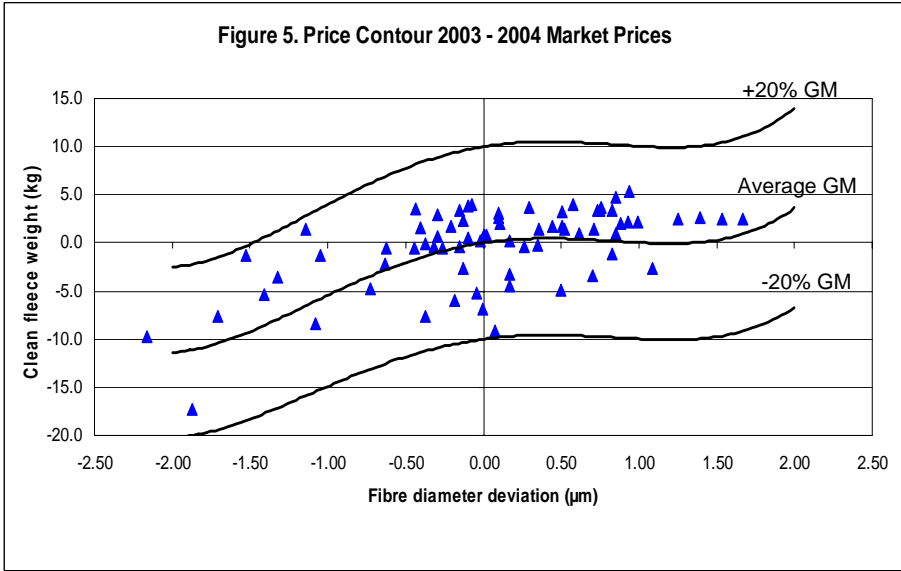


Figure 5 shows the gross margin contours using the average wool price for the 2003/04 season. [Figure 4](#) shows these details. This season has a flat premium profile, hence a similar gross margin is achieved across the whole micron range.

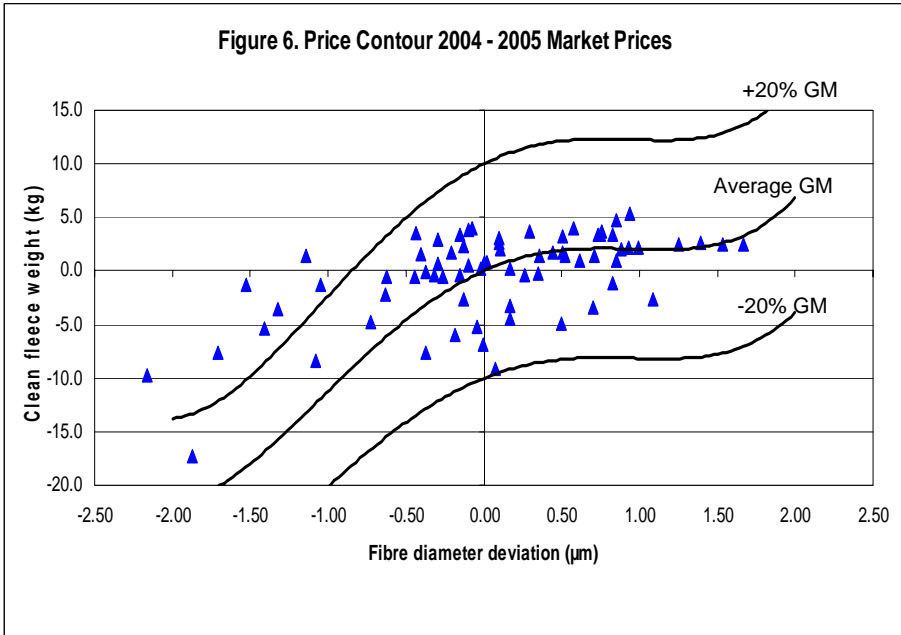


Figure 6 contour lines for the 2004/05 season show an advantage to the heavier cutting fine teams due to micron premiums increasing from 6% for 22µm to 13% for 20µm. The majority of bloodlines are at very similar values.

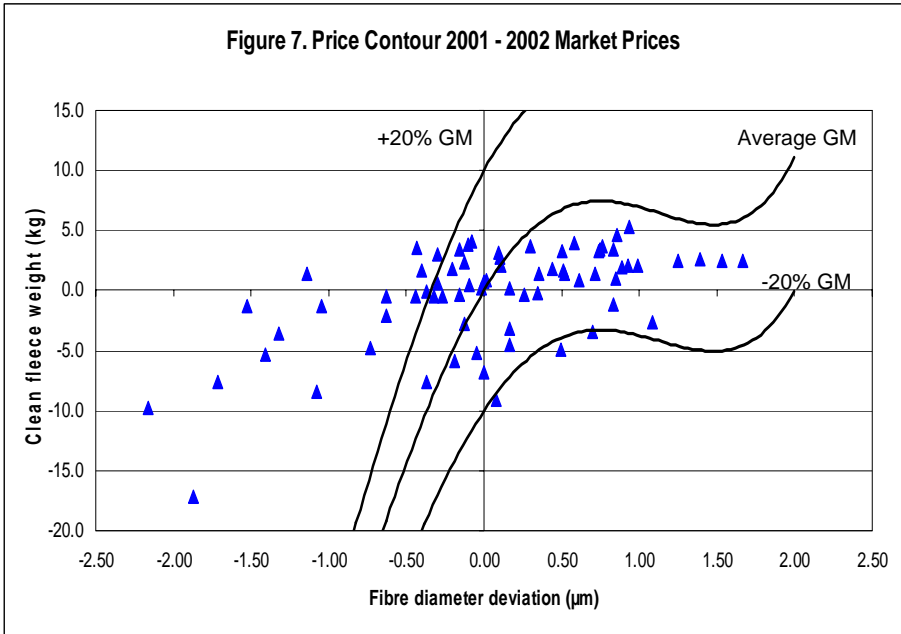


Figure 7 contour lines for the 2001/02 season show the high micron premiums (27%) for the fine wools, but low premiums for medium wools. The finest wool bloodlines have an extremely high gross margin despite their relatively low fleece weights. The lines flatten for the medium bloodlines due to flat premiums.

Market influence

The wool markets for 2001/02, 2003/04 and 2004/05 have been used to show the effects of different relative wool prices. [Figures 4](#) and [4a](#) provide the micron premium data for the last 5 years and long term averages.

This range of markets has been presented to assist breeders who are considering a range of breeding objectives.

There is a major change in gross margin value of bloodlines in the different market types demonstrated in [Figures 5, 6](#) and [7](#). It is critical to have a clear understanding of the market type you feel describes the future wool market and its influence on your breeding objective before bloodline selection is undertaken.

[Figures 5, 6](#) and [7](#) demonstrate the relationship between gross margin values, clean fleece weight and fibre diameter. A contour line on a graph joins points of equal gross margin value.

Three gross margin per DSE lines are shown on each graph. They are:

- 20 per cent above average;
- average;
- 20 per cent below average.

Bloodlines that are on, or close to, one of the three lines have a similar gross margin per DSE.

FURTHER INFORMATION

To make the best use of this information, producers should consider the details on the inside cover of the Merino Bloodline Performance folder and [Choosing a bloodline source - Primefact 74](#). 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 or Advanced Breeding Services ph (02) 6391 3967, fax (02) 6391 3922, email abs@dpi.nsw.gov.au or visit www.merinobloodlines.com.au

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ISSN: 1832-6668
JOB NUMBER: 6160

Disclaimer: The information contained in this publication is based on knowledge and understanding at the time of writing (September 2005). However, because of advances in knowledge, users are reminded of the need to ensure that information upon which they rely is up to date and to check currency of the information with the appropriate officer of New South Wales Department of Primary Industries or the user's independent adviser.

MICRON PREMIUM

Micron premium is a measure of the wool market's relative value of fleece weight and fibre diameter.

Micron premium is the percentage increase in price/kg for wool one micron finer. For example, the 20 micron premium is the value of 19 µm relative to 20 µm.

Calculating micron premium is simple and straightforward. Firstly obtain the two wool market values for the micron you are considering. They may be micron indicators (commonly used for general distribution) or prices for a wool type relevant to a particular situation. They could be spot values or average values calculated over a longer period that reduces short term fluctuations. They could be values you think will be relevant in the future. The example below sets out how to do the calculations.

Example: Micron premium for 20 µm wool

Step 1. Obtain the values of the micron you want to calculate and for one micron finer

For example:

- ◆ 20 µm value = 840 cents per kg
- ◆ 19 µm value = 954 cents per kg

Step 2. Calculate the value of fleece weight - that is, the value of 1 kg of wool for the micron you want to calculate.

The value of 1 kg of 20 µm wool
= 840 cents

Step 3. Calculate the value of fibre diameter - the difference between the value of the micron you want to calculate and the value of one micron finer.

The difference between 20 µm and 19 µm
= 114 cents per kg

Step 4. Calculate the relative value of fleece weight and fibre diameter - the value of fibre diameter divided by the value of fleece weight and expressed as a percentage (%).

$114 \times 100 = 13.6 \% \text{ MP}$
840



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