NSW GOVERNMENT Department of Primary Industries

primefact

Merino bloodlines: a comparison based on wether trial results 2004–2014

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Introduction

The relative performance of commonly used Merino bloodlines has been updated with the 2014 analysis of 22 wether trials and one ewe productivity trial conducted in NSW (17), Victoria (4), WA (1) and Tasmania (1) between 2004 and 2014.

The 2004 - 2014 Merino Bloodline Performance information is presented as follows:

- Figure 1 depicts the distribution of clean fleece weight and fibre diameter for 71 bloodlines.
- Figure 2 shows the performance of (a) staple length, (b) staple strength, (c) style and (d) colour versus fibre diameter.
- Figure 3 shows the range in liveweight and fibre diameter of the 71 bloodlines.
- Table 1 contains the median wool prices used to determine the financial performance of the bloodlines.
- Table 2 describes the presentation of the traits and provides an explanation of the Table 3 headings.
- Table 3 reports 71 bloodlines for the 11 individual traits and two financial performance indicators.
- Figure 4 illustrates the clean fleece weight and fibre diameter performance of each bloodline listed in Table 3.
- Figure 5 depicts the deviations in financial performance of the bloodlines, calculated as $/head, and fibre diameter.
- Figure 6 represents the deviations in financial performance of the bloodlines, calculated as $/dry sheep equivalent (DSE) and fibre diameter, while Figures 7 and 8 represent the deviations in financial performance ($/DSE) with clean fleece weight and liveweight respectively.

The trends

The relative performance of 71 bloodlines involved in wether and ewe comparisons across Australia are provided for clean fleece weight, fibre diameter, liveweight and both objectively measured (staple length and staple strength) and assessed wool quality traits (style and colour). Fibre diameter and clean fleece weight stability traits, which quantify the annual changes in these two traits with age, are also presented along with two measures of financial performance of the bloodlines, expressed on both a $/head and $/DSE basis.

The 71 bloodlines reported in this Primefact have information that is of high to medium accuracy. Only those bloodlines with a standard error of less than 3% for clean fleece weight are reported, which ensures the reliability of the relative performance of each of the bloodlines. The previous 1999-2010 analysis (Primefact 930), reported data from 57 trials with 53 high and 92 medium accuracy bloodlines. Compared with the previous analysis, there are 67 common and 4 new bloodlines represented in the current analysis.

The genetic differences

The relative performance of each of the teams of sheep in the different wether and ewe trials is a combination of the genetics of the sheep and the environment in which they were run. For any group of sheep, the performance we can see and measure (the phenotype) is a result of their genetics and the environment in which they have been raised. This is represented by the following equation:

Phenotype = Genetics + Environment

The Merino Bloodline Performance analysis removes the differences in environments between years in a trial and between trials. Bloodlines with multiple teams, both within and across trials, provide the linkage that allows variation between trials and across years within a trial to be accounted for, leaving only the genetic differences between bloodlines.

Clean fleece weight vs. fibre diameter

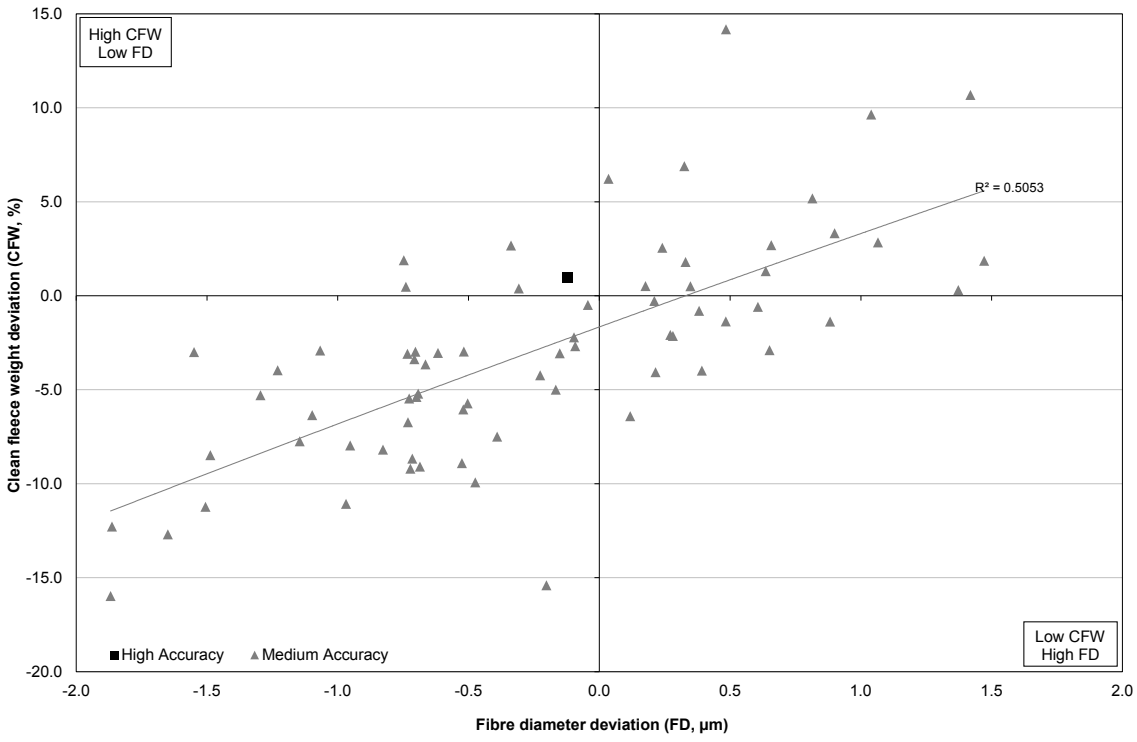
The distribution of bloodlines based on clean fleece weight and fibre diameter is depicted in Figure 1. The high accuracy bloodline is represented by the dark square and the medium accuracy bloodlines by the grey triangles. Moving from right to left identifies bloodlines with lower fibre diameter, while moving from bottom to top identifies those with higher fleece weights.

The average values for clean fleece weight and fibre diameter for the bloodlines from this analysis were 4.2 kg and 18.4 µm respectively. Note that it is not advisable to use these average values to define bloodline performance as the actual performance of a bloodline for clean fleece weight and fibre diameter will vary according to the environment in which the sheep are run.

There was a strong relationship between clean fleece weight and fibre diameter across bloodlines (Figure 1), with clean fleece weight tending to increase by 5% with every 1 µm increase in fibre diameter. However, there was significant genetic variation in clean fleece weight across the fibre diameter range, particularly within plus or minus 1 µm of the average fibre diameter, where there were differences in clean fleece between bloodlines of up to 10 %. This genetic variation between bloodlines in clean fleece weight provides producers with two key options to use when evaluating one or more bloodlines depending on the breeding objective of their commercial flock:

1. a finer bloodline can be chosen that will reduce fibre diameter without compromising clean fleece weight, or;
2. a bloodline with heavier clean fleece weight can be chosen while maintaining fibre diameter at the current level

Figure 1 Performance of 71 bloodlines for clean fleece weight (CFW) relative to fibre diameter (FD)



Wool quality vs. fibre diameter

Differences between the bloodlines in staple length, staple strength, style and colour are presented in Table 2. The average staple length and staple strength were 80.4 mm and 26.4 N/ktex respectively. The average style was 2.8 which is representative of good or MF5 style. The average colour was 1.1 indicative of little to no colour evident in the fleece.

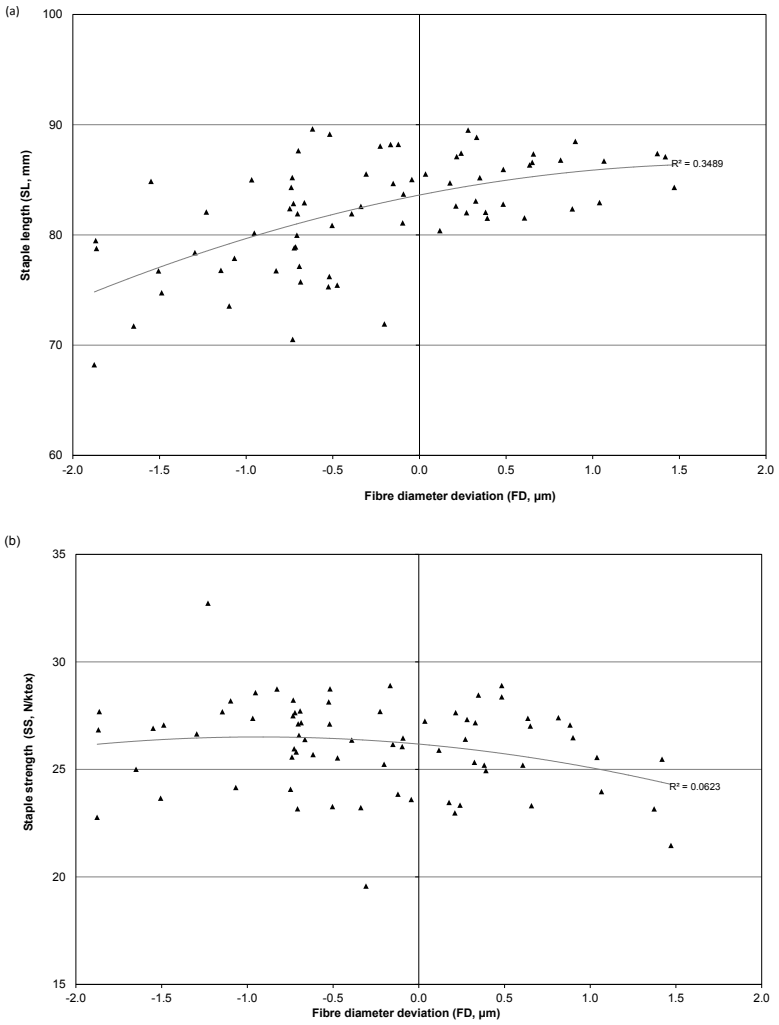
There was evidence of significant genetic variation in both staple length and staple strength at a given fibre diameter (Figure 2 a & b). This means that for a given fibre diameter, there is scope for producers to choose a bloodline with increased staple length and/or strength to complement their particular breeding objective.

For the 71 bloodlines analysed, there was less genetic variation in either style or colour at a given fibre diameter (Figures 2 c & d). Therefore, the choice of bloodline will have little influence on either the style or colour that is able to be achieved.

Liveweight vs. fibre diameter

There was a 23% difference in liveweight between the lightest (46.9 kg) and heaviest (60.7 kg) bloodlines. Finer bloodlines tend to have lower liveweight then broader bloodlines, the overall relationship being an increase of 2 kg liveweight for each 1 µm increase in fibre diameter. However, there is significant genetic variation in liveweight (between 5 and 10 kg) at a given fibre diameter, again within plus or minus 1 µm of the average fibre diameter (Figure 3). This indicates that at a given fibre diameter, it is possible for producers to select bloodlines with heavier liveweight if that is a component of their breeding objective.

Figure 2 Performance of 71 bloodlines for (a) staple length (SL, mm), (b) staple strength (SS, N/ktex), (c) style and (d) colour relative to fibre diameter deviation (FD, µm)



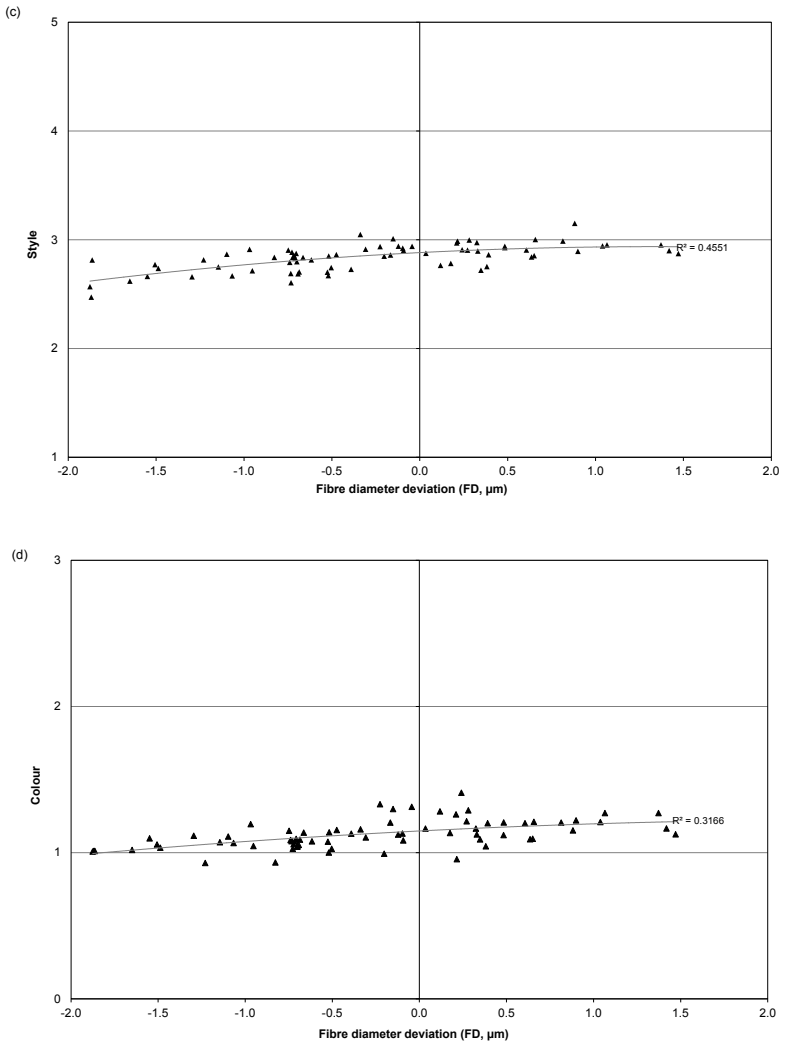
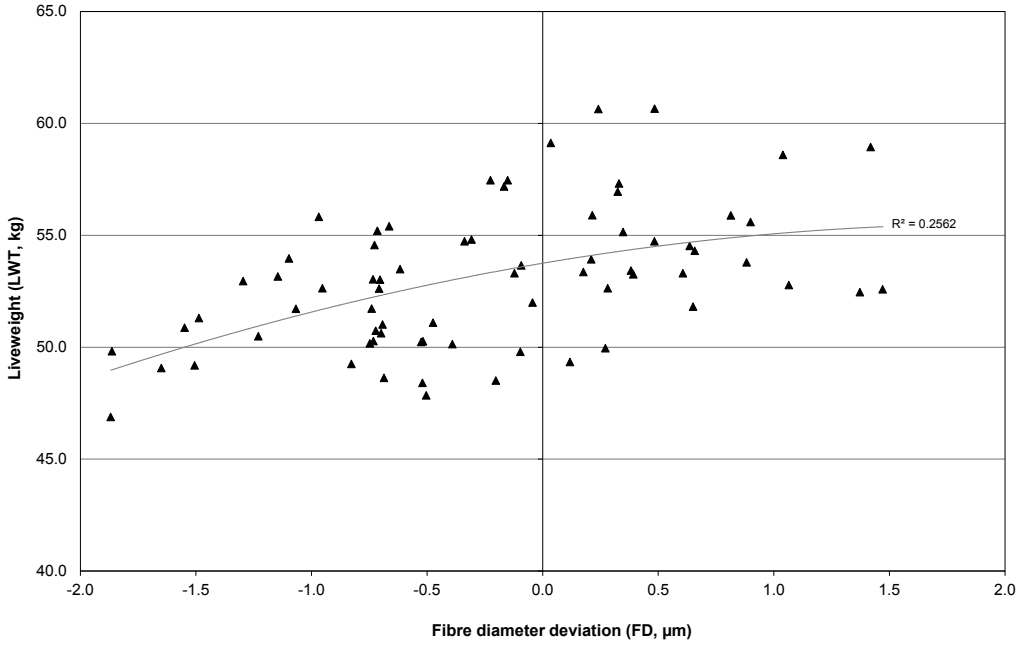


Figure 3 Performance of 71 bloodlines for liveweight (LWT) relative to fibre diameter (FD)



Wool production and quality

Figure 4 depicts the relative performance 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 3 which is reported in alphabetical and code order.

Table 3 provides detailed results for clean fleece weight, fibre diameter, liveweight and wool quality traits including both fibre diameter and clean fleece weight stability traits. The average performance for all bloodlines (high, medium and low accuracies) is reported at the bottom of each page in Table 3.

Bloodline financial performance

The financial performance of each bloodline was determined using the GrassGro™ decision support tool. GrassGro™ uses historical daily weather data to drive models of interacting pasture growth and animal production, with day-to-day changes in the water content of the soil, pasture growth and decay and responses to grazing simulated for a particular location.

The greasy fleece weight, yield, fibre diameter and liveweight for each of the 71 bloodlines provided the livestock production parameters for 71 GrassGro™ simulations. The same farm system was used for each simulation, with parameters for soil, pasture and weather provided by a site at Bookham, near Yass, in NSW.

Enterprise structure, prices and costs were held constant for all simulations and were reflective of a wether enterprise at Bookham, with wethers shorn three times and then sold.

The simulations ran from 1960 to the end of 2013, providing a quantitative assessment of the performance of each bloodline across the full spectrum of seasonal conditions from drought through to long wet years.

The stocking rate (wethers/ha) used in the GrassGro™ simulations for all bloodlines was chosen such that the bloodline with the median liveweight would achieve the rule of maintaining not less than 60% ground cover for any day in 71% of the years. This ground cover rule ensured the sustainability of the pasture over the long term.

Median wool and mutton prices for the 5 years from 2009 to the end of 2013 were used to determine the financial performance of each bloodline as this provided a better indication of the prices likely to be achieved by producers than the average wool and mutton prices. The median wool prices for that time period are presented in Table 1 and the median mutton price used was 287c/kg carcass weight.

Table 1 Average and median wool prices (c/kg clean) for the period 2009 – 2013

Fibre diameter	Average price (not used)	Median price (used in analysis)
16	1785	1600
17	1515	1355
18	1369	1260
19	1238	1195
20	1111	1120
21	1087	1110
22	1058	1080
23	1028	1015

Changes in the wool and mutton prices would have an impact on the bloodline rankings. The greatest change would result from a change in the micron premiums.

Measures of financial performance

GrassGro™ outputs include profit per head ($/hd), per hectare ($/ha) and per dry sheep equivalent ($/DSE). Each of these outputs includes typical enterprise costs and an overhead cost per hectare calculated by the program for the environment in which the simulations were run. As the same stocking rate was used for each of the 71 GrassGro™ simulations the $/hd and $/ha outputs are essentially the same.

The two measures of financial performance of the bloodlines reported here are:

- *profit per head ($/hd)* which partially accounts for differences in liveweight between bloodlines as GrassGro™ allocates more supplementary feed to those bloodlines with higher liveweight to maintain the required minimum fat score of 1.5.
- *profit per dry sheep equivalent ($/DSE)* which helps the reader to account for the impact that differences in liveweight will have on grazing pressure. The DSE rating calculated by GrassGro™ over the 53 years of simulations is based on the consumption of feed for a given liveweight and fleece production. Profit per DSE is calculated as follows:

$$\frac{\$/\text{hd}}{\text{DSE rating}}$$

GrassGro™ was also used to estimate the financial performance for a selection of the bloodlines using soil and pasture parameters for a site at each of Woolbrook and Narrandera to explore the impact of location on the relative financial performance of the bloodlines. For these bloodlines the correlations between the profit per head ($/hd) between the 3 sites were greater than 97% with 96% of the sampled bloodlines retaining their ranking across the three sites. Therefore, despite large differences in sheep production systems between these three sites, the relative financial performance of the bloodlines remained very similar.

Contribution of traits

For the wether enterprise in the GrassGro™ simulations, based on 3 fleeces and 1 mutton value, wool income accounted for 74% of the variation in financial performance between bloodlines, while income from meat accounted for 26% of the variation in financial performance. Depending on the relative values of wool and mutton, the income from meat accounted for between 22% and 30% of the variation in financial performance between bloodlines.

Table 2 Explanation of table headings

Table heading	Explanation
Bloodline	The bloodline nominated by the entrant of each team in the individual wether and ewe trials
Code	Number used to locate a bloodline in Figures 4, 5 and 6.
CFW & LWT	Clean fleece weight (CFW) and liveweight (LWT) reported as the percentage deviation from the average.
FD, YLD and FDCV	Fibre diameter (FD), yield (YLD) and coefficient of variation in fibre diameter (FDCV) reported as deviations from the average.
FDST	Fibre diameter stability is the annual change in fibre diameter with age, reported in microns per year. For example, if the FDST is 0.1 it is expected that as a sheep gets older its fibre diameter will increase genetically by 0.63 µm per year (0.53 + 0.1), where 0.53 µm is the average expected increase in FD as a wether ages.
CFWST	Clean fleece weight stability is the annual change in clean fleece weight with age, reported as a percentage deviation. For example, if the CFWST is 1.25 it is expected that as a sheep gets older its clean fleece weight will genetically increase by 6.25 % per year (5.0 + 1.25), where 5.0 % is the average expected increase in CFW as a wether ages.
SL	Staple length reported as a deviation from the average in mm.
SS	Staple strength reported as a deviation from the average in N/ktex.
STYLE	Wool style – spinners (MF3), best (MF4), good (MF5), average (MF6) and inferior (MF7) grades (coded 1 to 5 respectively). Reported as deviation from the average. For more information go to http://www.awex.com.au/standards/awex-id-appraisers/
COL	Fleece colour – no colour, light unscourable and medium unscourable grades (coded 1 to 3 respectively). Reported as deviation from the average. For more information go to http://www.awex.com.au/standards/awex-id-appraisers/
Profit $/hd	The financial performance derived from GrassGro™ reported on a dollar per head ($/hd) basis.
Proft $/DSE	The financial performance derived from GrassGro™ reported on a dollar per dry sheep equivalent ($/DSE) basis.
No. of teams	The number of wether or ewe teams representing the bloodline in the analysis. Bloodlines can be represented by teams from the ram breeding flock itself and/or by clients' teams.
No. of records	The number of records for a bloodline. This includes repeated evaluation of the same sheep.
ACC	Accuracy: H = High accuracy (the standard error for CFW is less than 2%), M = Medium accuracy (the standard error for CFW is between 2% and 3%).

Table 3 Bloodline performance for key production traits, components of wool type and financial performance for the 71 high and medium accuracy bloodlines

Bloodline	Code	CFW (%)	LWT (%)	FD (µm)	YLD (%)	FDCV (%)	CFWST (%/yr)	FDST (µm/yr)	SL (mm)	SS (N/ktex)	STYLE	COL	Profit $/head	Profit $/dse	No. of teams	No. of records	ACC
A.M.S	1	-11.1	2.5	-1.0	-3.3	-1.9	0.01	-0.02	2.8	1.3	0.08	0.07	25.31	20.76	3	208	M
Akeringa	2	0.3	-0.9	1.4	-2.7	1.8	0.03	0.01	5.2	-2.9	0.12	0.15	26.08	21.79	3	48	M
Alfoxton	3	-9.2	-2.6	-0.7	-1.9	-1.3	0.03	0.08	-3.4	1.6	0.01	-0.07	24.38	20.72	3	89	M
Avenel	4	0.4	1.5	-0.3	-0.2	1.9	0.00	0.31	3.3	-6.5	0.08	-0.02	26.77	22.07	2	56	M
Avonside	5	-2.2	-3.5	-0.1	-0.7	0.8	0.04	0.13	-1.1	0.0	0.09	0.01	25.46	21.72	6	208	M
Barrackville	6	-9.1	-4.7	-0.7	-1.1	-1.2	0.02	-0.21	-6.5	1.1	-0.13	-0.04	24.10	20.72	2	34	M
Belbourie	7	2.8	-0.6	1.1	-0.4	1.5	0.03	0.21	4.5	-2.1	0.12	0.15	26.04	21.76	3	45	M
Billa Burra Burra	8	-6.4	-4.0	0.1	-3.1	1.1	0.02	-0.03	-1.8	-0.2	-0.07	0.16	24.86	21.25	2	30	M
Billandri	9	2.5	7.3	0.2	-2.0	0.3	-0.01	-0.04	5.2	-2.7	0.08	0.28	27.92	22.01	3	40	M
Blackford	10	-5.0	3.8	-0.2	-3.4	-1.8	-0.02	-0.50	6.0	2.8	0.03	0.08	27.46	21.94	3	48	M
Bogo	11	-3.1	-0.3	-0.7	-0.8	-0.4	0.02	-0.06	3.0	1.4	-0.14	-0.05	26.98	22.58	10	462	M
Bungoona	12	1.3	1.2	0.6	3.9	-0.8	0.02	0.16	4.2	1.3	0.01	-0.03	23.62	19.57	4	161	M
Bungulla	13	-2.9	-1.5	0.7	-0.8	-1.3	0.03	0.10	4.4	0.9	0.02	-0.03	23.85	20.10	3	102	M
Cassilis Park	14	-4.0	-0.1	0.4	0.8	-0.2	0.03	-0.05	-0.7	-1.1	0.03	0.08	22.55	18.89	4	131	M
Centre Plus	15	-4.2	4.1	-0.2	-3.9	-0.4	0.01	-0.21	5.9	1.6	0.11	0.21	28.33	22.55	5	136	M
Charinga	16	14.2	7.3	0.5	3.2	-1.6	0.02	0.24	3.7	2.8	0.11	0.08	29.31	23.12	3	48	M
Corroboree	17	-5.4	-2.7	-0.7	-0.5	-0.4	0.01	-0.08	5.5	0.5	-0.03	-0.08	25.15	21.30	5	183	M
Cottage Park	18	2.7	1.4	-0.3	-2.2	0.8	0.03	0.09	0.4	-2.8	0.22	0.03	29.38	24.15	4	83	M
Cressbrook	19	-8.0	-0.7	-1.0	1.1	-1.4	0.02	-0.07	-2.0	2.5	-0.12	-0.08	23.90	20.15	13	448	M
East Loddon	20	6.9	3.6	0.3	1.5	0.2	-0.07	0.22	0.9	-0.7	0.14	0.04	29.31	23.43	5	96	M
Averages		*4.2 kg*	*52.8 kg*	*18.4 µm*	*73.0 %*	*18.0 %*	*4.0 %*	*0.5 µm*	*80.4 mm*	*26.4 N/ktex*	*2.8*	*1.1*	*$26.18*	*$21.81*			

Bloodline	Code	CFW (%)	LWT (%)	FD (µm)	YLD (%)	FDCV (%)	CFWST (%/yr)	FDST (µm/yr)	SL (mm)	SS (N/ktex)	STYLE	COL	Profit $/head	Profit $/dse	No. of teams	No. of records	ACC
Egelabra	21	-2.7	0.3	-0.1	-0.8	-0.4	0.03	-0.19	1.5	0.4	0.07	-0.04	25.00	20.82	8	450	M
Eilan Donan	22	-8.7	1.9	-0.7	-2.4	-1.3	0.01	-0.26	-3.3	-0.3	0.02	-0.05	25.15	20.72	5	93	M
Ellerina	23	-5.7	-5.5	-0.5	-0.3	0.3	0.02	0.06	-1.3	-2.8	-0.09	-0.10	25.31	21.85	2	46	M
Glanna	24	-8.2	-4.1	-0.8	-1.6	-0.9	0.02	0.03	-5.4	2.7	0.01	-0.19	24.93	21.40	3	47	M
Glen Donald	25	-0.3	0.6	0.2	-3.3	1.0	0.03	0.21	0.4	-3.1	0.14	0.14	27.31	22.45	8	301	M
Gowandale	26	3.3	2.2	0.9	2.1	0.1	0.04	0.47	6.3	0.4	0.06	0.10	25.00	20.52	6	94	M
Greendale	27	1.9	-3.2	-0.7	-1.7	0.6	0.03	0.02	0.2	-2.0	0.07	0.02	29.69	25.20	10	300	M
Greenland	28	-6.7	-3.1	-0.7	-2.5	-0.3	0.02	-0.38	-11.7	2.2	-0.23	-0.04	26.00	22.13	2	72	M
Gringegalgona	29	-3.0	0.1	-0.6	-2.6	-0.9	0.02	0.01	7.4	-0.4	-0.02	-0.05	26.85	22.39	4	74	M
Grogansworth	30	0.5	0.0	0.2	1.2	1.5	0.02	0.03	2.5	-2.6	-0.05	0.01	24.46	20.44	5	140	M
Haddon Rig	31	-0.6	0.0	0.6	-0.1	0.4	0.02	0.03	-0.7	-0.9	0.07	0.08	24.64	20.57	11	514	M
Havilah North	32	-5.3	-0.4	-1.3	-1.3	-1.2	0.02	-0.08	-3.8	0.6	-0.17	-0.01	28.05	23.46	2	81	M
Hazeldean	33	1.0	0.0	-0.1	-0.6	0.5	0.03	0.09	6.0	-2.2	0.11	0.00	26.61	22.17	23	993	H
Karori	34	-16.0	-6.5	-1.9	-1.6	-1.7	0.02	-0.40	-2.7	0.8	-0.36	-0.11	26.12	22.95	2	55	M
Kerrsville	35	-4.0	-2.9	-1.2	0.4	-1.0	0.03	0.27	-0.1	6.7	-0.02	-0.20	27.08	23.05	3	46	M
Kilfeera Park	36	-1.4	1.4	0.5	-3.0	0.3	0.01	-0.02	0.6	2.3	0.10	-0.01	26.77	22.00	5	91	M
Kurra Wirra	37	-3.0	-0.3	-0.7	-1.6	-0.4	0.01	-0.20	-0.3	1.1	0.04	-0.08	26.53	22.21	6	91	M
Merrignee	38	-7.5	-3.2	-0.4	0.2	-0.7	0.02	-0.31	-0.3	0.3	-0.10	0.00	22.77	19.47	4	95	M
Merrinjuck	39	-15.4	-4.8	-0.2	-4.4	-0.5	0.01	-0.33	-10.3	-0.8	0.02	-0.13	21.68	18.64	2	60	M
Averages		*4.2 kg*	*52.8 kg*	*18.4 µm*	*73.0 %*	*18.0 %*	*4.0 %*	*0.5 µm*	*80.4 mm*	*26.4 N/ktex*	*2.8*	*1.1*	*$26.18*	*$21.81*			

Bloodline	Code	CFW (%)	LWT (%)	FD (µm)	YLD (%)	FDCV (%)	CFWST (%/yr)	FDST (µm/yr)	SL (mm)	SS (N/ktex)	STYLE	COL	Profit $/head	Profit $/dse	No. of teams	No. of records	ACC
Merryville	40	-12.7	-4.3	-1.6	-1.6	-0.6	0.02	-0.21	-10.5	-1.1	-0.21	-0.11	26.91	23.17	8	328	M
Middle View	41	-5.2	-2.3	-0.7	-2.3	-0.5	0.02	-0.18	-5.0	1.7	-0.14	-0.07	26.77	22.64	11	378	M
Myocum	42	-8.9	-3.1	-0.5	-2.2	-0.6	0.02	-0.07	-6.9	2.1	-0.13	-0.05	23.85	20.33	3	116	M
Nareeb Nareeb	43	-0.5	-1.4	0.0	-2.9	1.1	0.03	0.21	2.8	-2.5	0.11	0.19	27.15	22.82	3	92	M
Nerstane	44	-3.0	-3.1	-0.5	-0.2	-0.9	0.01	0.03	6.9	2.7	0.02	0.01	25.69	21.89	8	251	M
One Oak	45	2.7	1.0	0.7	1.8	0.6	0.03	-0.04	5.2	-2.8	0.17	0.09	25.23	20.80	5	118	M
One Oak No 2	46	0.5	1.8	0.3	0.2	0.4	0.01	-0.12	3.0	2.4	-0.11	-0.03	25.38	20.87	2	87	M
Panorama	47	10.7	5.6	1.4	2.7	-0.5	0.02	0.23	4.9	-0.6	0.07	0.04	29.74	23.40	3	45	M
Pastora	48	-3.7	2.1	-0.7	-1.2	-0.3	0.02	0.02	0.7	0.3	0.00	0.01	27.08	22.25	17	975	M
Pooginook	49	5.2	2.5	0.8	1.3	0.5	0.03	0.17	4.6	1.3	0.16	0.08	26.57	21.73	7	170	M
Quamby Park Poll	50	-8.5	-2.0	-1.5	0.1	-1.1	0.01	-0.27	-7.4	1.0	-0.10	-0.09	26.54	22.53	2	71	M
Rogara	51	-7.7	-0.2	-1.1	0.0	-1.2	0.03	-0.23	-5.4	1.6	-0.08	-0.05	25.26	21.20	2	50	M
Roseville Park	52	-3.4	-0.7	-0.7	-1.7	0.6	0.03	0.35	-2.2	-2.9	0.00	-0.03	26.62	22.30	5	150	M
Roxanna Poll	53	-1.4	0.4	0.9	1.6	0.3	0.02	0.14	0.2	1.0	0.32	0.03	22.92	19.09	3	131	M
Salt Creek	54	-9.9	-2.3	-0.5	1.1	1.1	0.05	-0.85	-6.8	-0.5	0.03	0.03	22.46	19.07	3	45	M
Severn Park	55	-4.1	2.6	0.2	0.4	-0.9	0.03	0.13	4.9	1.6	0.15	-0.17	23.40	19.19	5	198	M
Snowy Plain	56	-6.4	0.6	-1.1	-0.8	-0.6	0.02	-0.03	-8.6	2.1	0.04	-0.01	26.38	21.96	4	77	M
Tallawong	57	-3.0	-2.5	-1.5	-0.6	-0.6	0.02	-0.07	2.7	0.8	-0.17	-0.03	30.69	25.99	6	165	M
The Lagoons	58	-0.8	0.1	0.4	-0.7	0.0	0.03	-0.05	-0.1	-0.9	-0.08	-0.08	24.85	20.71	3	83	M
Averages		*4.2 kg*	*52.8 kg*	*18.4 µm*	*73.0 %*	*18.0 %*	*4.0 %*	*0.5 µm*	*80.4 mm*	*26.4 N/ktex*	*2.8*	*1.1*	*$26.18*	*$21.81*			

Bloodline	Code	CFW (%)	LWT (%)	FD (µm)	YLD (%)	FDCV (%)	CFWST (%/yr)	FDST (µm/yr)	SL (mm)	SS (N/ktex)	STYLE	COL	Profit $/head	Profit $/dse	No. of teams	No. of records	ACC
The Mountain Dam	59	-5.5	1.2	-0.7	-3.9	-1.0	0.00	-0.20	0.7	-0.1	0.05	-0.10	27.38	22.57	6	88	M
Toland	60	1.8	4.0	0.3	-1.2	-0.1	0.01	-0.04	6.7	1.1	0.06	0.00	28.37	22.60	5	92	M
Towalba	61	1.9	-0.8	1.5	-0.1	2.4	0.02	0.90	2.1	-4.6	0.04	0.00	25.30	21.15	2	59	M
Wallaloo Park	62	-2.1	-0.7	0.3	0.6	-0.3	0.02	0.08	7.3	1.3	0.17	0.16	23.52	19.75	6	135	M
Wanganella	63	9.6	5.2	1.0	2.4	-0.2	-0.17	0.23	0.7	-0.5	0.11	0.08	29.49	23.29	3	44	M
Wantana	64	-2.1	-3.4	0.3	-2.4	0.6	0.03	-0.01	-0.2	0.3	0.07	0.09	25.71	21.88	3	98	M
West Vale	65	-6.1	-4.9	-0.5	0.3	-0.1	0.02	-0.12	-6.0	1.0	-0.16	-0.12	24.56	21.14	4	118	M
Weston Park	66	-11.2	-4.2	-1.5	-3.8	-0.3	0.01	-0.42	-5.4	-2.4	-0.06	-0.07	27.07	23.23	3	64	M
Woodpark	67	6.2	5.8	0.0	0.2	-1.7	0.02	-0.44	3.3	1.2	0.04	0.04	30.87	24.26	3	45	M
Woodpark Poll	68	-3.1	4.1	-0.2	-0.8	0.1	0.02	-0.15	2.5	0.1	0.18	0.17	26.93	21.53	4	115	M
Woolaroo	69	-2.9	-1.6	-1.1	-2.3	0.7	0.02	-0.13	-4.3	-1.9	-0.16	-0.06	28.69	24.21	7	205	M
Yalgoo	70	-12.3	-3.5	-1.9	-0.8	-1.6	0.01	-0.03	-3.4	1.6	-0.02	-0.11	27.30	23.44	5	174	M
Yarrawonga	71	0.5	-1.6	-0.7	-2.2	0.2	0.00	-0.11	2.1	-0.5	-0.04	-0.04	29.23	24.61	7	232	M
Averages		*4.2 kg*	*52.8 kg*	*18.4 µm*	*73.0 %*	*18.0 %*	*4.0 %*	*0.5 µm*	*80.4 mm*	*26.4 N/ktex*	*2.8*	*1.1*	*$26.18*	*$21.81*			

Figure 4 Bloodline deviations for clean fleece weight (CFW) and fibre diameter (FD) for the 1 high and 70 medium accuracy bloodlines

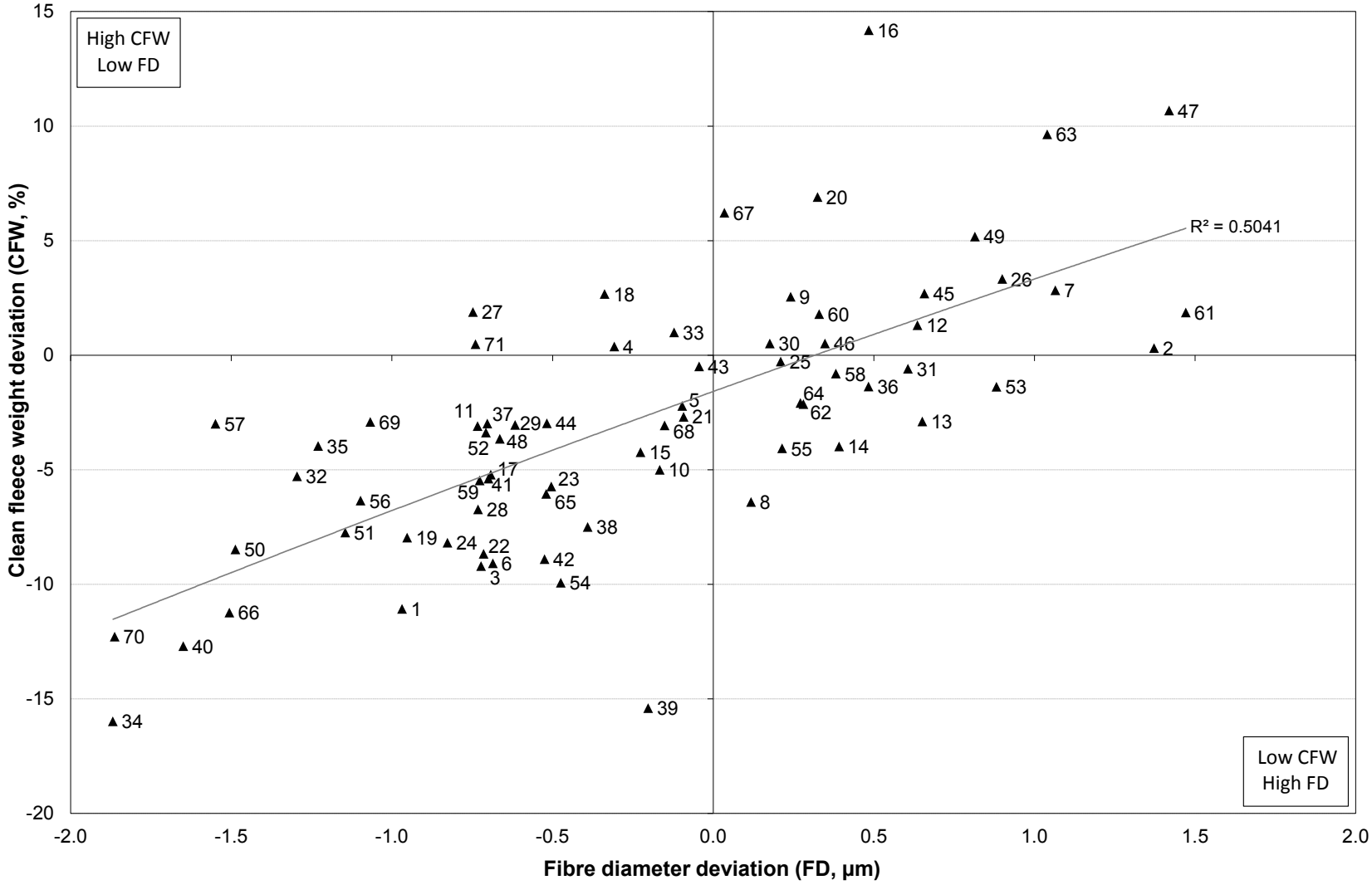


Figure 5 Bloodline deviations for profit calculated as $/head ($/hd) and fibre diameter (FD) for the 1 high and 70 medium accuracy bloodlines

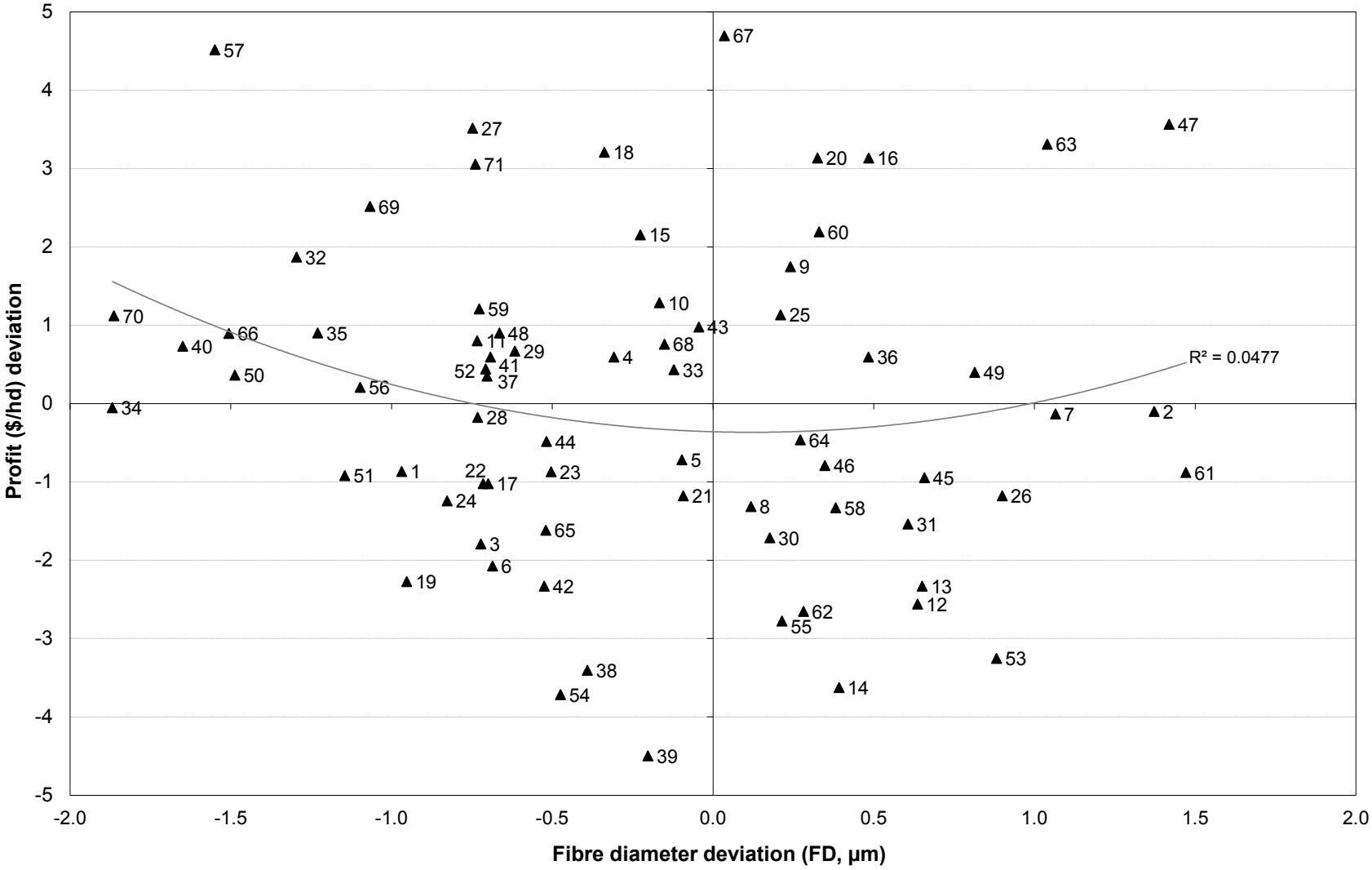


Figure 6 Bloodline deviations for profit calculated as $/dry sheep equivalent (DSE) and fibre diameter (FD) for the 1 high and 70 medium accuracy bloodlines

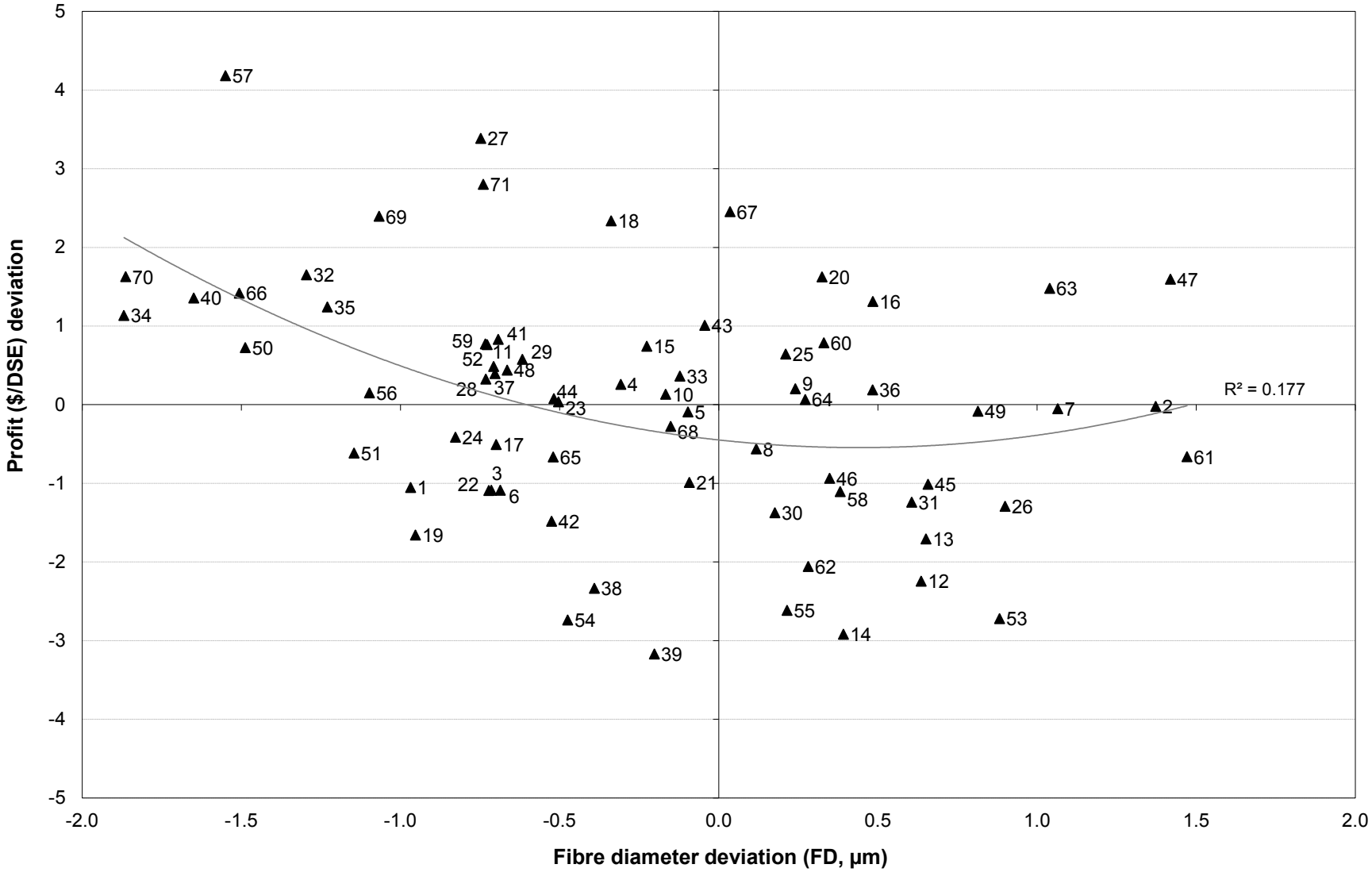


Figure 7 Bloodline deviations for profit calculated as $/ dry sheep equivalent (DSE) and clean fleece weight (CFW, %) for the 1 high and 70 medium accuracy bloodlines

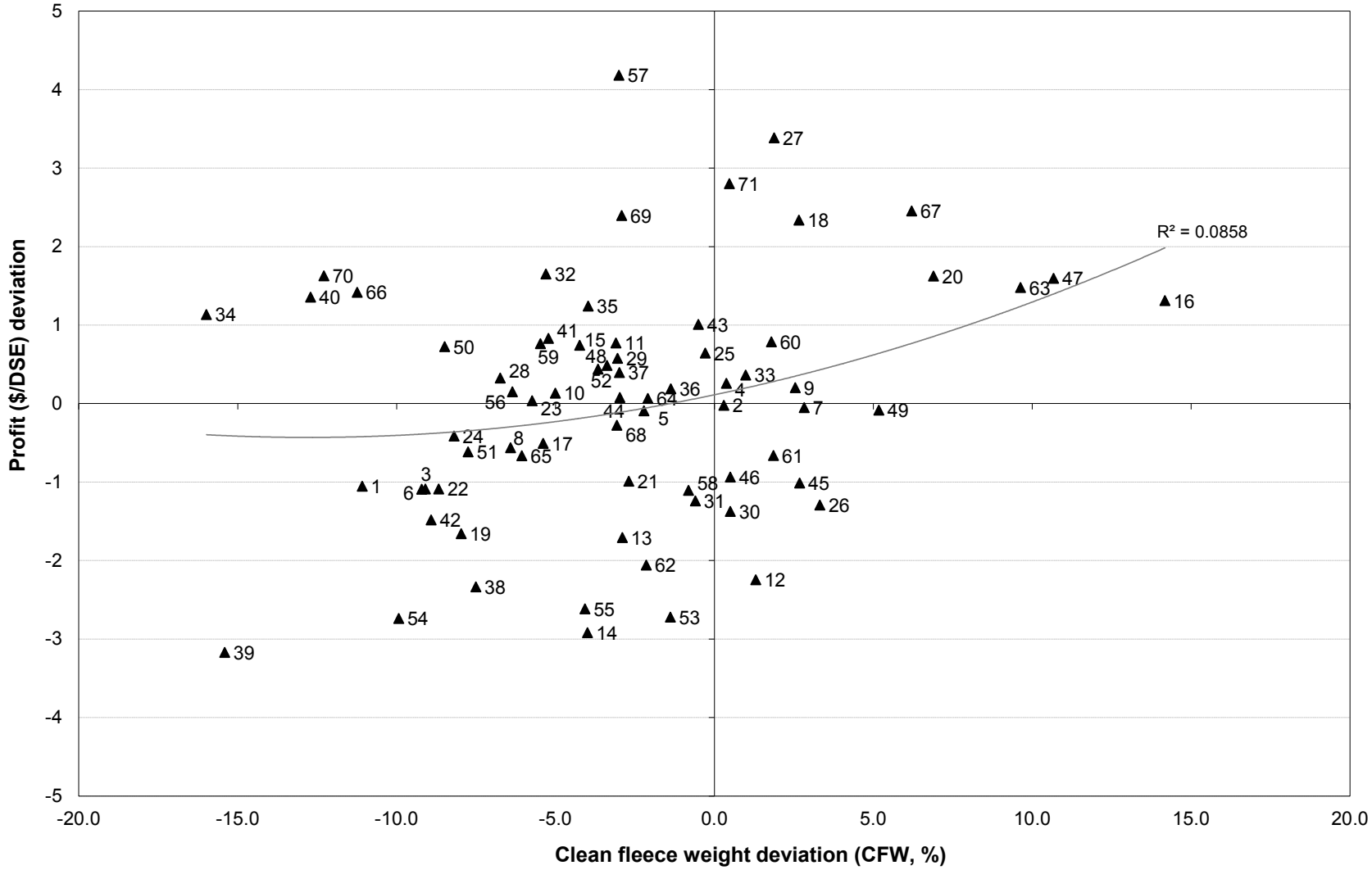
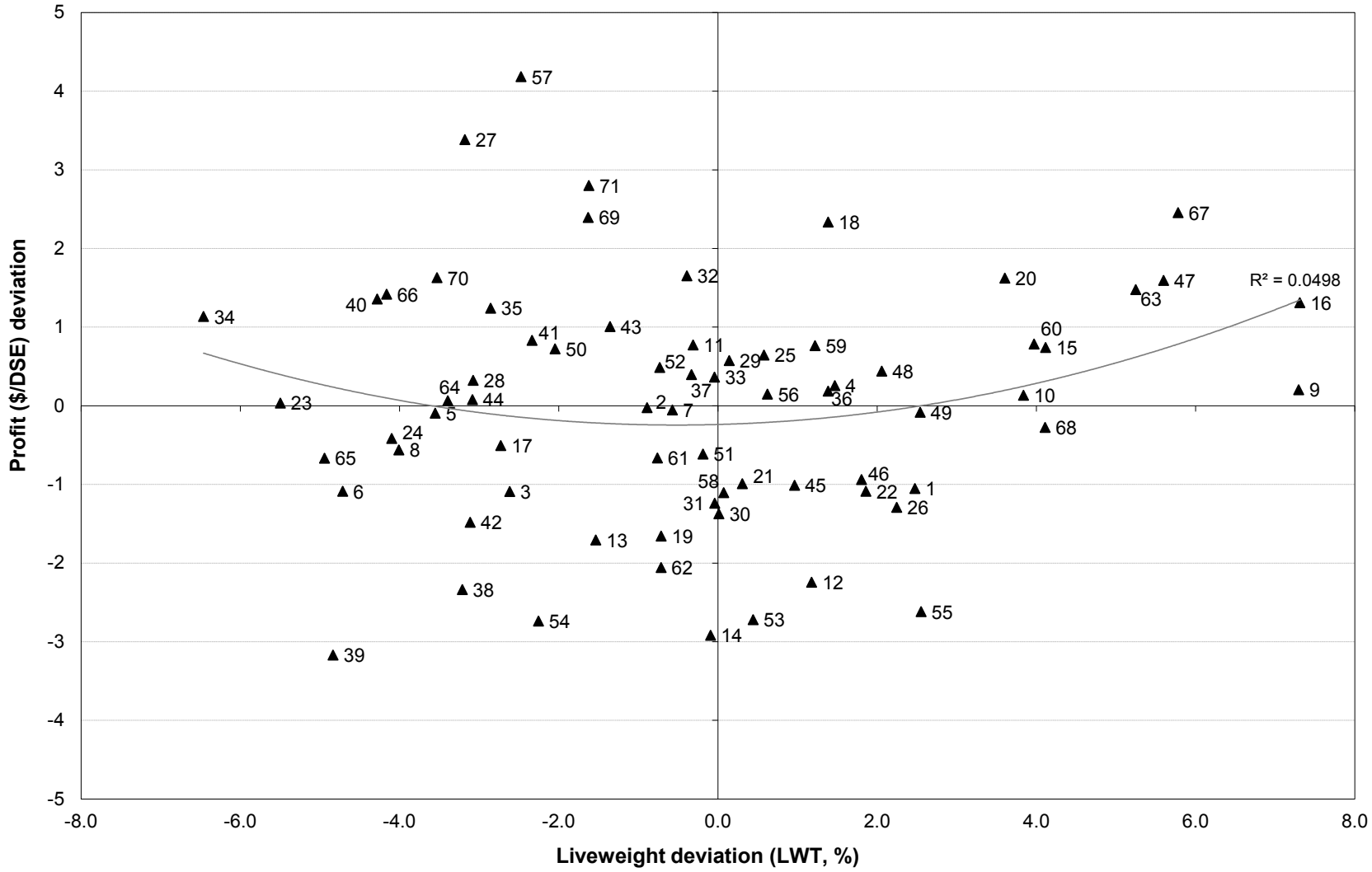


Figure 8 Bloodline deviations for profit calculated as $/ dry sheep equivalent (DSE) and liveweight (LWT, %) for the 1 high and 70 medium accuracy bloodlines



Trials included in this analysis

Bloodline data used in this analysis were sourced from wether and ewe comparisons that had been run for a minimum of two years (65% of comparisons), and a maximum of three years (Table 4).

Table 4 Wether comparisons and ewe productivity trials included in this analysis

Trial name	State	Trial years
Wagga (CWWT)	NSW	2005-2006
Yass IV	NSW	2005-2006
ANFD Schute Bell 2005	NSW	2005-2007
Bathurst 2005	NSW	2005-2006
M2M Elmore	VIC	2004-2005
M2M Dookie	VIC	2004-2005
M2M Hamilton	VIC	2004-2005
M2M Stawell	VIC	2004-2005
Midlands Ag Assoc	TAS	2006-2007
Avondale Ewe Trial	WA	2004-2006
Alectown	NSW	2007-2008
Armour	NSW	2005-2006
Glen Innes 05	NSW	2005-2007
ANFD Wether Trial 2007-2010	NSW	2008-2010
Bookham 2008-11	NSW	2008-2009
Paling Yards, Taralga	NSW	2009-2010
Merrimba	NSW	2009-2010
Peter Westblade Memorial Challenge	NSW	2010-2012
Bathurst 2009-2011	NSW	2009-2011
Bookham 2011-2013	NSW	2011-2012
Glen Innes 2009-2011	NSW	2009-2011
Parkes 2010-2012	NSW	2010-2012
Monaro 2012-2014	NSW	2012-2013

There was a total of 72 bloodlines in the analysis, however only performance levels of the 1 high and 70 medium accuracy bloodlines are considered sufficiently accurate to be reported (Table 2). Table 5 provides the details of the low accuracy bloodline whose performance has not been reported. The performance of any low accuracy bloodline is only made available to the bloodline or the entrant of the team and can be obtained from NSW DPI by completing the "Low accuracy bloodline and team request form" on the webpage: www.merinobloodlines.com.au.

Low accuracy performance is only a guide. More teams need to be entered into wether or ewe trials to improve the accuracy to be reported in future bloodline performance analysis.

Table 5 Low accuracy Merino bloodline not reported for performance

Bloodline	Code	ACC
Pomanara	551	L

Limitations

The information generated by the Merino Bloodline Performance analysis provides an objective comparative evaluation of the genetic variation between Merino bloodlines. It is a useful tool to aid decision making by wool producers in choosing alternative bloodline sources that match the breeding objectives of their commercial flocks. However the limitations of the information need to be recognised:

- The financial performance reported in this Primefact is based on a wether enterprise shorn 3 times and sold as mutton.
- Merino Bloodline Performance information is historic as the database for this report was restricted to comparisons that commenced within the past 10 years. Therefore, the relative performance of each bloodline represents the breeding policies of that stud and their commercial clients 5 to 15 years ago. Recent changes in breeding objectives or practices at the stud and commercial level will not be reflected in this information.
- Differences in the number of teams representing each bloodline and the accuracy of each bloodline's performance information are listed in Table 2. Making decisions on alternative bloodlines of MODERATE accuracy will involve a slightly higher risk than those of HIGH accuracy.
- All teams included in this analysis were selected according to the guidelines set out in *Designing and conducting Merino wether comparisons and on-farm genetic evaluations*. This limits the ability of wether and ewe trial entrants to specifically select sheep for the trials and assists stud breeders and each of the wether and ewe trials contributing data to this analysis to define a team representing a flock as being of a particular bloodline.
- This analysis is unable to account for whether the teams have come from the

bloodline's ram breeding flock or from their commercial clients. A high proportion of teams from higher merit flocks may occur when the stud's own commercial flock provides the majority of the teams which make up the bloodline result. We recommend that producers ask their stud whether the teams representing that bloodline were from the studs own flock or their commercial clients.

- The relative financial performance of the bloodlines do not account for any variation between bloodlines in reproductive performance.

When using the information presented in this Primefact to evaluate one or more bloodlines it is important to contact the stud representing each bloodline directly and seek information that describes their bloodline's genetic improvement policy and direction. Primefact 74, *Choosing a Bloodline Source,* provides a comprehensive description of how to use bloodline performance information to evaluate one or more bloodlines (http://www.dpi.nsw.gov.au/agriculture/merino-bloodline-performance/choose-a-bloodline-source).

Further information

Not all traits reported by some of the wether and ewe trials are included in this Primefact. These include meat traits, face cover, fertility, wrinkle development and fleece rot. Some of these traits are evaluated at Merino sire evaluation sites. Reports from these sites can be accessed from the Australian Merino Sire Evaluation Association's (AMSEA) Merino Superior Sires website or via the Sheep Genetics MERINOSELECT website.

Merino Bloodline Performance information complements the Australian Sheep Breeding Values (ASBVs) provided by MERINOSELECT that predict the genetic merit of individual sheep and stud averages.

Other useful resources

To make the best use of this information, producers should consider the details on the inside cover of the Merino Bloodline Performance folder and the information contained in the folder which includes:

- Primefact 1381. Merino bloodlines: a comparison based on wether trial results 2004 – 2014
- Primefact 74. Choosing a bloodline source
- Bloodline contacts
- Application to be added to the mailing list
- Request form for low accuracy bloodline and flock performance results
- Feedback form to suggest changes for future publications

The Merino Bloodline Performance website (www.merinobloodlines.com.au) has been updated with the results of this analysis along with all the information contained in the bloodline package.

Other associated information sources include:

- *Designing and conducting Merino wether comparisons and on-farm genetic evaluations.* http://www.dpi.nsw.gov.au/agriculture/merino-bloodline-performance/running-wether-trials
- Ewe productivity trials, including information on reproduction differences. http://www.agric.wa.gov.au/PC_91878.html?s=1001
- Merino Superior Sires website. http://www.merinosuperiorsires.com.au/
- Sheep Genetics MERINOSELECT website. http://www.sheepgenetics.org.au/Breeding-services/MERINOSELECT-Home

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www.dpi.nsw.gov.au/primefacts

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