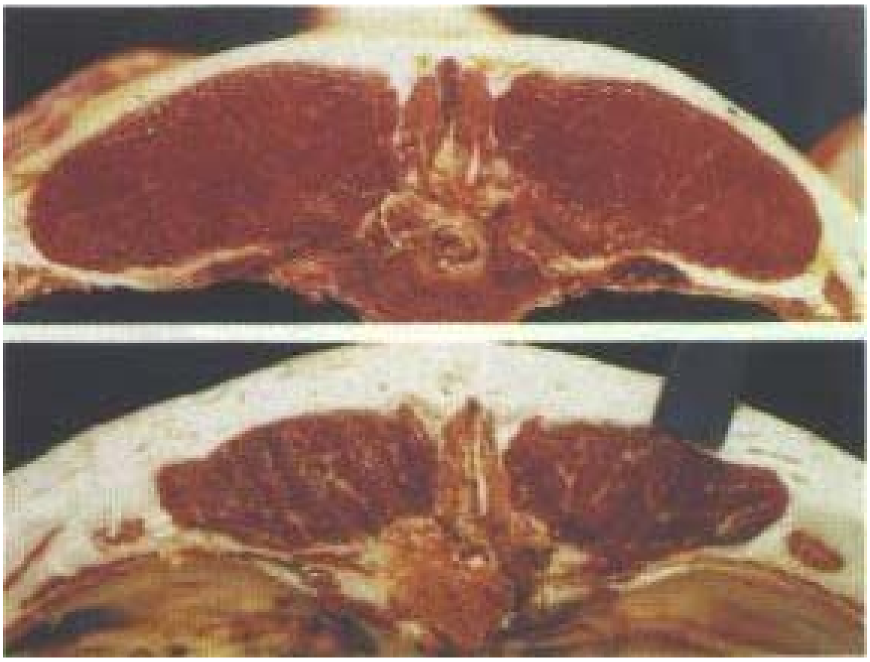
FINAL REPORT

White Suffolk PIRD Trial

October 2004

Analysis and Report by Troy Fischer



Contents

Executive Summary

- Sires with higher BWT EBVs produced more lambing difficulty and longer gestation
- Different sires had different growth patterns with some having progeny heavier at certain ages and lighter at others
- Carcase EBVS are a good indicator of carcase traits at various ages
- Carcase EBVS and Lambplan indexes are an accurate indicator of carcase value and are useful tools for breeding animals with more weight in the high value cuts and ultimately higher value lambs
- There was no difference in wool density, medullation or skin value of lambs from the different sires irrespective of genetic background
- There was little or no relationship between length and carcase weight or loin weight

Important Messages

- Sires generally performed according to their EBVs
- Growth and Carcase EBVs and the Lambplan indexes are useful tools for increasing the value of prime lambs produced

Background Information

Approximately 300 merino ewes were inseminated on 24th February, 2003 to 15 different high profile industry sires (20 ewes per sire) detailed in Table 1. There were 13 White Suffolk sires and 2 Poll Dorset (PD) sires used in the trial. It is important to note that there were some adverse weather conditions at the time of lambing, this combined with many multiple births resulted in significant mortality of many lambs. This was not specific to individual sires however some sires lost more lambs than others. Of particular interest are the rams with less than ten progeny at weaning (Detpa Grove 100, Gaerloch 10 and Woolumbool 8017), the performance of these rams is estimated with less accuracy than those with more progeny. This is represented in the higher standard errors of sire solutions of these rams and hence should be interpreted with caution.

Table 1 – Progeny per sire.

Stud	Tag	Progeny Born	Progeny Born Alive	Progeny at Weaning
Alkoomie	960047	16	10	10
Anna Villa	990119	17	16	14
Ashmore	000050	24	14	14
Burwood	970904	20	13	12
Detpa Grove	010343	19	14	14
Detpa Grove	990100	18	6	6
Gearloch	990010	16	10	9
Ivadene (PD)	990154	21	13	13
Kurralea (PD)	980211	19	16	15
Leachim	990020	26	23	21
Leachim	010006	22	20	19
Leawarra	001147	13	11	11
Waratah	000015	16	14	14
Woolumbool	990612	23	19	17
Woolumbool	988017	15	7	7
	Average	**19**	**14**	**13**

Measurements Taken

At time of birth all lambs were weighed, birth and rear typed, birth difficulty was recorded, date of birth and sex. Following this weight measures were taken on all lambs at around 50, 100, 150 and 200 days of age and all animals were scanned for fat and muscle depth at 150 and 200 days. In addition, Faecal Egg Counts (FEC) were taken on all animals following weaning (a period of higher challenge). OFDA measurements were taken on fleece samples at shearing to measure the level of medullated fibre for each of the sire's progeny. A list of measurements is detailed in Table 2. An additional weight was taken at 250 days and weight, fat and muscle as well as wool density and two length measurements were all taken at around 300 days. The animals were slaughtered at an average of 287 days old at Struan Meats and a series of carcase traits were measured including carcase weight, GR fat depth, short loin length, weight of loin, rack, tenderloin, leg, forequarter, shank, bone, trim, fat weight, forequarter fat weight.

Table 2a – Measurements Recorded

Birth	50 Days	100 Days	150 days	200 days
Weight	Weight	Weight	Weight	Weight
Gestation Length			Fat depth	Fat depth
Birth difficulty			EMD	EMD
			FEC	
			OFDA	

Table 2b – Measurements Recorded

250 Days	300 Days	Kill	Kill	Kill
Weight	Weight	Hot Carcase Weight	Rack Weight	Forequarter Fat Weight
	Fat depth	GR fat depth	Loin Weight	Bone Weight
	Eye muscle Depth	Cold Carcase Weight	Tenderloin Weight	Trim Weight
	Length – Tail to rib	Short Loin Length	Leg Weight	Shank Weight
	Length – Tail to shoulder	Forequarter Weight	Fat Weight	

Analyses

All analyses were performed by Troy Fischer at the Animal Genetics and Breeding Unit, Armidale using the latest statistical techniques and software. The analyses were conducted under the supervision of Dr. Daniel Brown (AGBU). Each trait was adjusted for significant effects (e.g. rear type, sex, etc). The information presented in this report are phenotypic means adjusted for significant effects. These are presented in a series of tables with the corresponding LAMBPLAN EBV for the related trait (1/11/03 Across Flock Run) and sires are ranked according to these EBVs. Each graph has a regression line and equation that explains the trend in the data and the r^2 value represents how well the data fit this trend (the higher the r^2 the better that fit). This work did not attempt to extract genetic information due the small size of progeny groups. A series of summary statistics for each trait is presented in Tables 3a, 3b and 3c.

Important Notes

There are a number of factors relating to the information contained in this report, which need to be considered when interpreting the results.

- Merino ewes were used in this trial, hence the expression of genes in Merinos may be different to terminal sire breeds.
- No maternal effects (e.g. milk, mothering ability) are accounted for however it is likely that maternal effects have a large role at young ages.
- An animal only gets half its genes from its sire, hence the maternal component which is not included in this study plays a big role.

- Particular sires had very few progeny (<10) with which to estimate the results, hence the accuracy of the results for particular sires will be lower in these cases and should be interpreted accordingly.
- Heterosis (hybrid vigour) is also involved but only has a small impact on growth and development traits.
- Only a proportion of lambs were slaughtered due to costs associated with collection of data of this nature. Consequently, only male lambs were slaughtered with and average of 6.2 progeny per sire.
- There was no significant difference in the accuracy of LAMBPLAN EBVs for the sires used in this trial at Post Weaning and Yearling (96% and 91% accuracy respectively), hence each were compared to phenotypic measures at the appropriate ages.

Table 3a - Summary Statistics Birth, Weaning & Early Post Weaning Data

Trait	Number of Observations	Mean	Min	Max
Birth Weight (kg)	285	5.1	2.2	8.2
Gestation Length (days)	285	150	144	156
Birth difficulty	21			
50 Day Weight (kg)	201	16.8	8.4	28.3
100 Day Weight (kg)	196	30.5	16.6	47.5
150 Day Weight (kg)	199	38.8	18.6	57
150 Day Fat (mm)	199	3.7	1.5	5.0
150 Day EMD (mm)	199	24.1	13.0	29.0
150 Day FEC (epg)	187	564	0	1860
150 Day OFDA Flat (No. per 10,000)	196	9	3	40
150 Day OFDA Objectionable (No. per 10,000)	196	132	3	4485

Table 3b - Summary Statistics Post Weaning and Yearling Data

Trait	Number of Observations	Mean	Min	Max
200 Day Weight (kg)	197	40.4	20.0	56.5
200 Day Fat (mm)	197	3.5	1.5	4.5
200 Day EMD (mm)	197	23.2	15.0	28.0
250 Day Weight (kg)	195	51.7	35.8	70.2
300 Day Weight (kg)	196	51.3	36.2	67.0
300 Day Fat (mm)	196	4.6	3	6
300 Day EMD (mm)	196	28.6	23.0	33.0
300 Day Length Tail – Rib (cm)	90	38.3	31.0	48.0
300 Day Length Tail – Shoulder (cm)	90	59.8	47.0	70.0
300 Day Wool Density	196	3.4	2	5

Table 3c - Summary Statistics Yearling and Kill Data

Trait	Number of Observations	Mean	Min	Max
Hot Carcase Wt (kg)	94	23.9	16.5	31.5
GR Fat Depth (mm)	94	9.0	3.0	20.0
Cold Carcase Wt (kg)	94	22.8	16.3	30.5
Short Loin Length (cm)	94	20.6	17.0	23.5
Forequarter Weight (kg)	94	4.21	2.83	5.84
Rack Weight (kg)	94	1.09	0.71	1.99
Loin Weight (kg)	94	0.69	0.46	1.04
Tenderloin Weight (kg)	94	0.35	0.20	0.47
Leg Weight (kg)	94	4.63	3.25	6.4
Fat Weight (kg)	94	1.88	0.80	3.29
Forequarter Fat Weight (kg)	94	0.65	0.30	1.05
Bone weight (kg)	94	5.53	3.86	7.01
Trim weight (kg)	94	2.46	1.67	3.67
Shank weight (kg)	94	1.45	1.12	1.98

Analysis of Birth Traits

Birth Weight
Rams that have high positive EBVs for birth weight generally produced lambs above average weight when corrected for birth type and sex, however this relationship appears to be relatively weak in this data set. There is a large maternal component associated with BWT also which may explain aberrations to what we might expect.

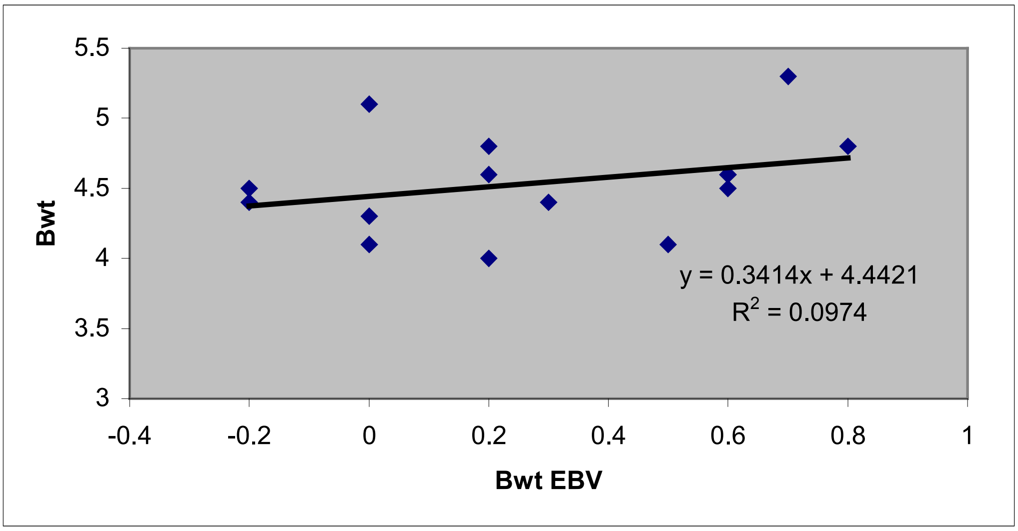


Figure 1 – BWT EBV vs. BWT corrected for effects

Gestation length
There was very little variation in the data for this trait, however, rams that left higher birth weight lambs also had longer gestation lengths when corrected for birth type. This potentially suggests that BWT EBVs may be positively correlated to gestation length.

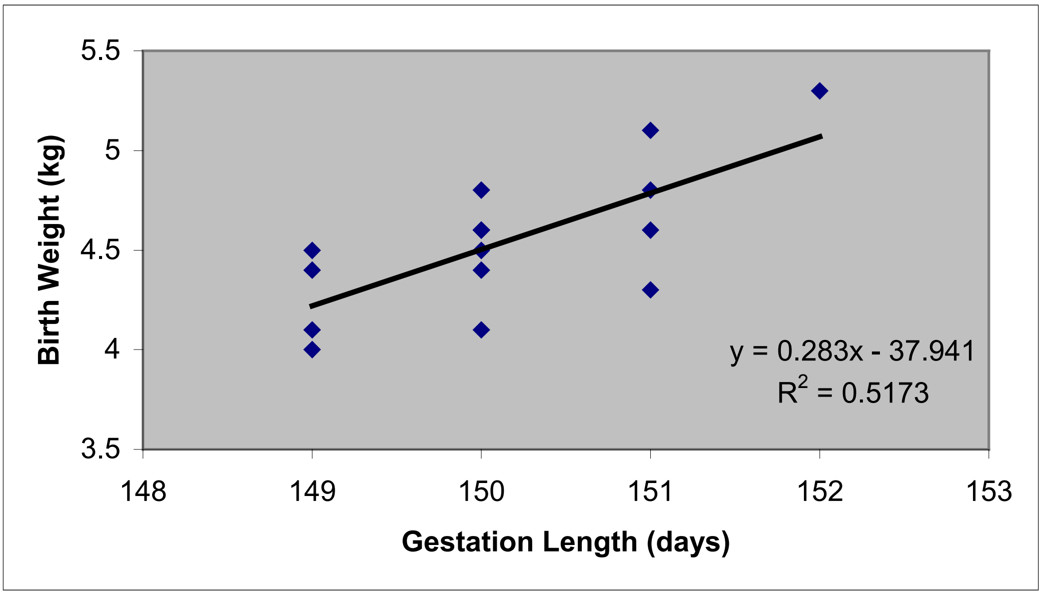


Figure 2 – Gestation length vs Birth weight

Lambing Ease

There were not enough records to run an analysis on this trait but a summary is contained in Table 4. Rams that left high birth weight lambs had more birth difficulty. Most lambs that did have difficulty were singles and >6kg at birth (up to 8.2 kg).

Table 4 – Lambing Ease

Lambing Ease	Code						
Unobserved	0	All births were unobserved except for those below					
No Assistance	1	A50					
Some assistance	2	A50	LAM6	W612	LAM6	A50	
Hard Assistance	3	IV154	IV154				
Abnormal Presentation	4	DG100	W612	DG343	B904	W612	W612
Other	5	IV154	IV154	B904			
Swollen Head	~	LE1147	DG343	IV154	W612		

Analysis of Growth Patterns.

Rather than analyse each weight measure as a separate trait, each weight measure was treated as a continuous expression of the same trait that changes through time. Table 5 shows the deviations of selected sires from the average curve (L20 was the average) based on progeny performance.

Table 5 – Deviations (in Kg) from the average weight at 5 selected ages.

Age (days)	50	100	150	200	250
L20	0.0	0.0	0.0	0.0	0.0
AV119	-0.6	-0.1	0.2	0.2	0.1
W612	-0.5	0.4	0.8	1.0	0.8
G10	0.3	2.4	3.5	3.6	2.7
A50	-1.9	-1.2	-0.5	0.3	1.2
LAM6	1.4	3.3	4.4	4.8	4.4
DG343	-1.0	-0.4	-0.3	-0.7	-1.5
ALK47	-0.8	-1.1	-1.4	-1.8	-2.4
DG100	4.4	4.5	4.4	4.0	3.5
LE1147	2.3	3.2	3.8	4.2	4.3
K211	0.9	2.2	3.0	3.3	3.2
B904	1.2	2.9	3.7	3.5	2.4
W8017	-1.2	0.4	1.7	2.6	3.2
WA15	0.7	2.5	3.6	4.1	3.9
IV154	2.7	2.8	2.6	2.2	1.4

As can be seen there are large variations in growth patterns between different sires. A number of different growth patterns are apparent and are highlighted below with examples:

- Some sires produced progeny that were above average weight at all ages
  - e.g. LAM 6
- Other sires produced progeny that were below average weight at all ages
  - e.g. ALK 47
- Some sires produced progeny that grew faster than average at certain times during life, but slower at other times
  - e.g. G10
- Other sires had a relatively flat growth pattern and in doing so suggest that their progeny grew around the average of the group at all times
  - e.g. AV119
- Finally, certain sires produced progeny that grew below average early in life and then above average by slaughter age, which could be an illustration of high worm burdens at an early age or also different genes for growth.
  - e.g. A50

Analysis of Post Weaning Carcase Measures.

Carcase measures were adjusted to a constant weight basis as is performed by LAMBPLAN.

Fat Depth

Sires with large negative fat EBVs produced lambs leaner than average at constant weight. Sires with high positive fat EBVs produced fatter lambs on average. A similar pattern was seen at 150, 200 and 300 days and comparison with post weaning and yearling fat EBVs with fat depth at 200 and 300 days respectively is shown in Figure 5a and 5b to highlight this. Interestingly, no sires had unacceptably over fat lambs even at older ages.

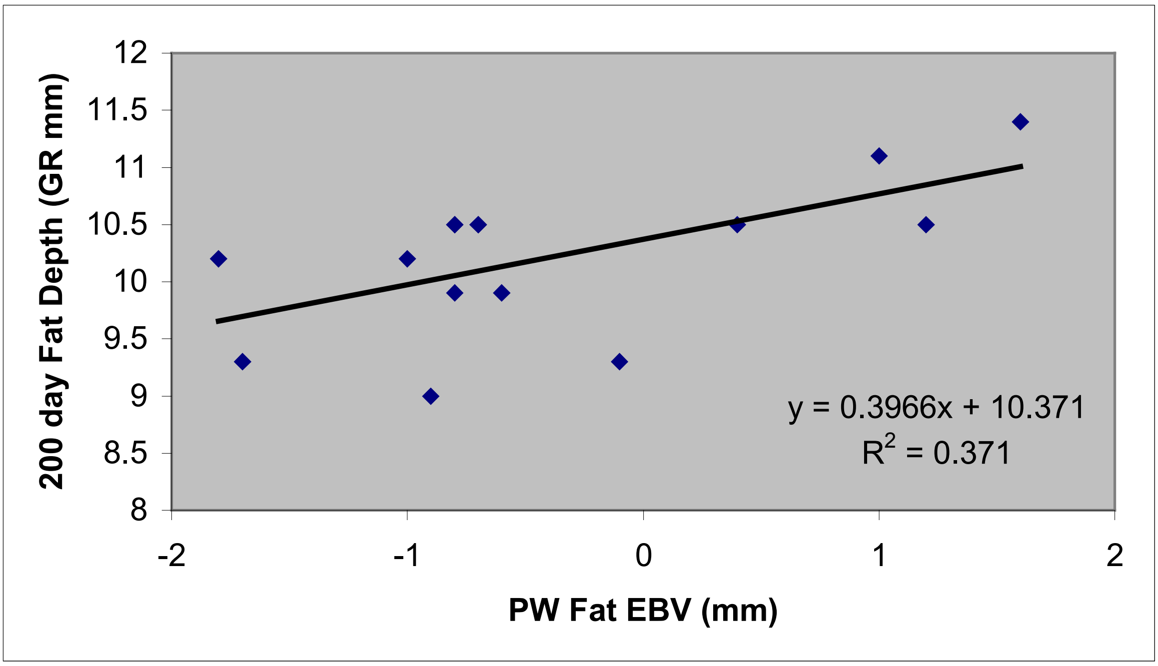


Figure 5a - PW Fat EBV vs 200 day Fat Depth

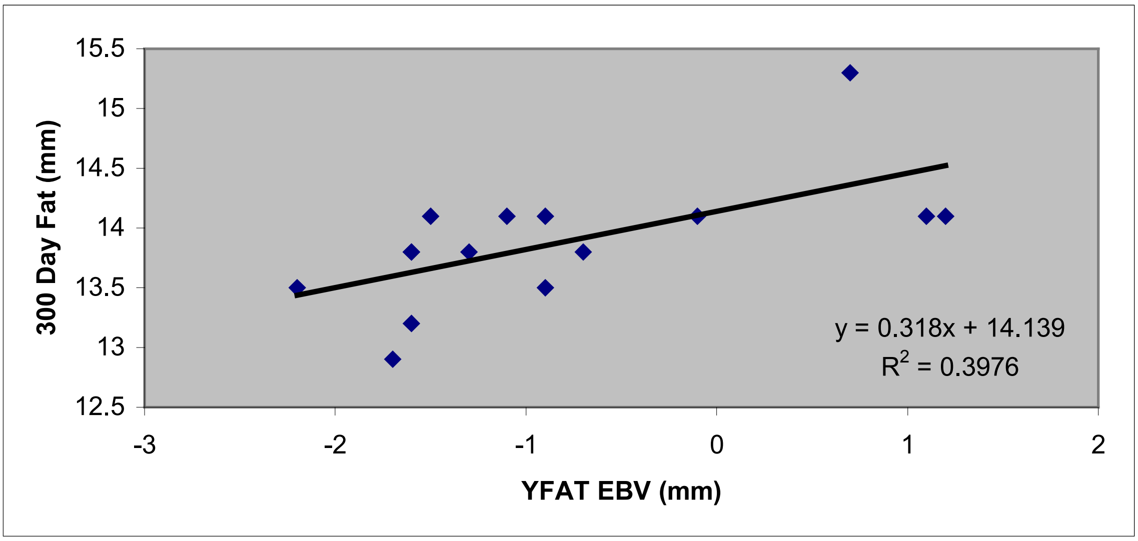


Figure 5b - Yearling Fat EBV vs 300 day Fat Depth

Eye muscle depth

Sires with higher PEMD EBVs produced lambs with higher EMD at constant weight. Sires with lower EBVs for EMD produced lambs with smaller EMD at constant weight. A similar pattern was seen at 150, 200 and 300 days hence only results for 200 and 300 day EMD compared with post weaning and yearling EMD EBVs respectively are shown (Figure 6a and 6b).

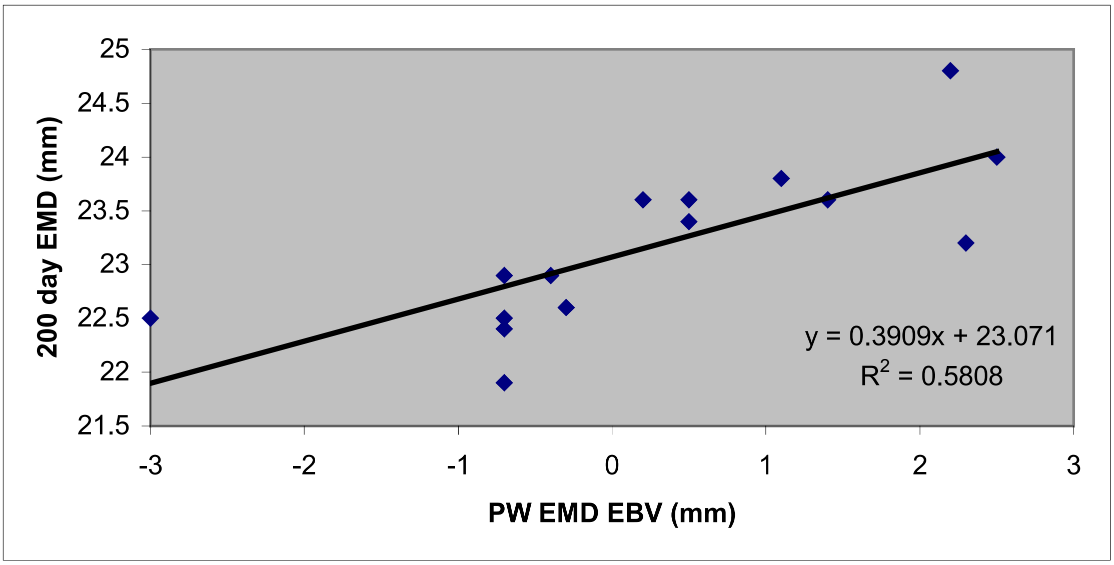


Figure 6a - PW EMD EBV vs 200 day EMD

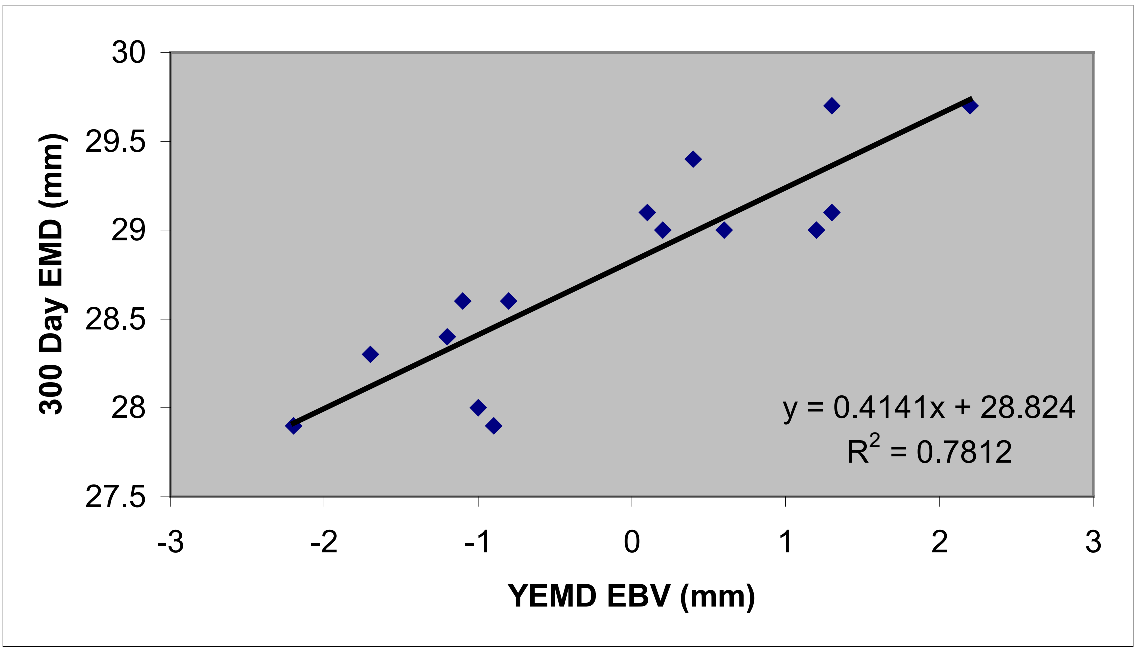


Figure 6b - PW EMD EBV vs 300 day EMD

Analysis of Post Weaning FEC Measures.

FEC measures (in eggs per gram) were corrected for rear type. Interestingly, FEC was shown to not have significant effect on the growth traits, however a weak negative relationship was seen between FEC and 150-day weight (Figure 7). This has implications for breeders with clients who may be in worm prone areas. Many of the sires had very low accuracies for FEC EBVs (<50%), which highlights the potential need to increase level of recording for this trait. It should be noted that FEC is a complex trait both biologically and statistically, hence it is unlikely that the data generated in this trial (small progeny groups) is sufficient to draw solid conclusions about the trait in this study.

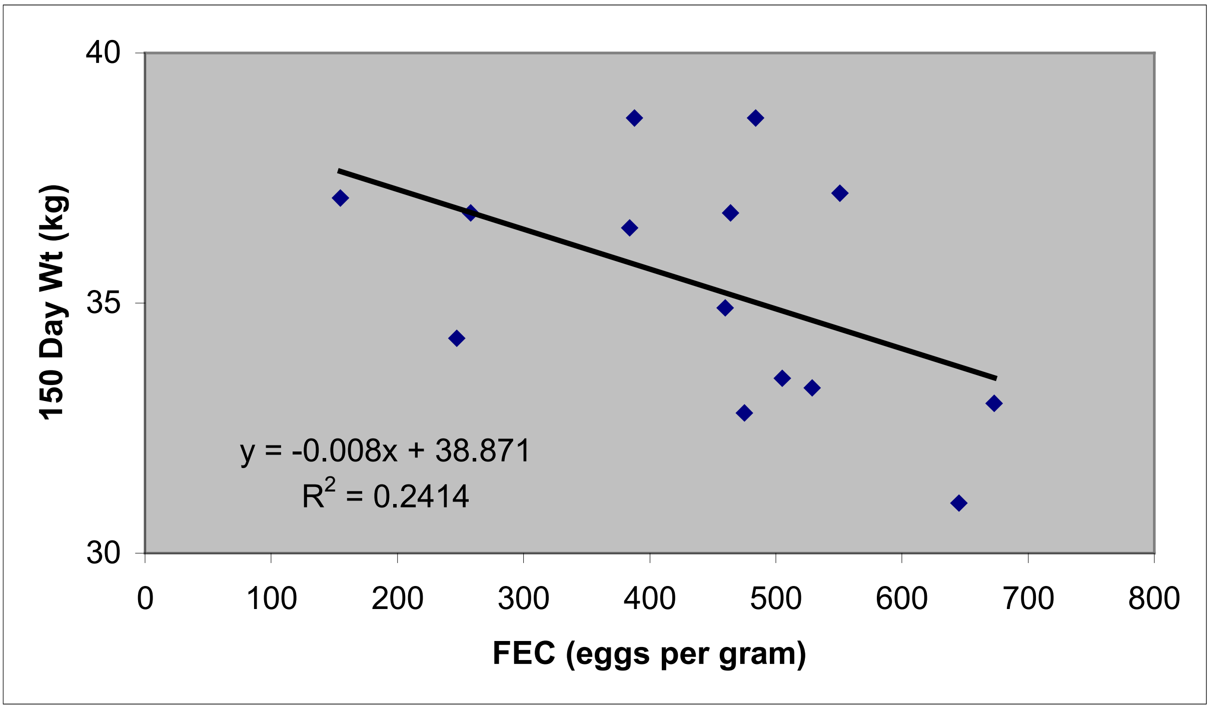


Figure 7 – FEC (eggs per gram) vs. 150 day weight (kg)

Analysis of Carcase Measures at Slaughter

All carcase measures were adjusted to a constant carcase weight. Values of the primals were obtained from Struan Meats and are considered representative of retail prices as of August 2004 (Appendix A). There was a strong positive relationship between yearling weight and carcase weight. However the relationship between Cold carcase weight (corrected for rear type) and YWT EBV was not as strong as expected with some sires producing lambs heavier than expected and vice versa.

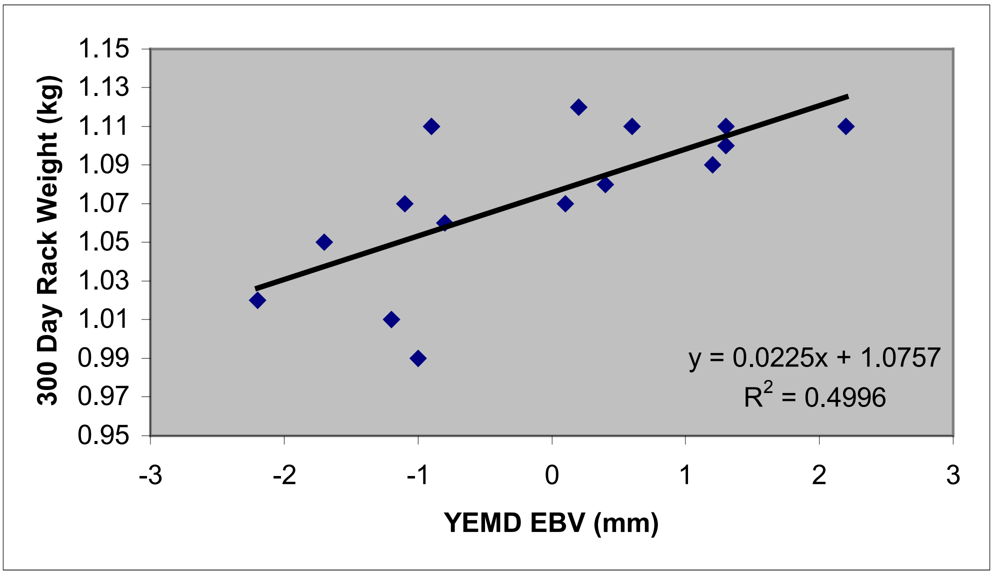


Figure 8a – Rack Weight vs. YEMD EBV

There is a positive relationship between YEMD EBV and Rack weight shown in Figure 8a with sires possessing higher EMD EBVs producing lambs with heavier Rack weights and vice versa. This has implications for lambs sold through a value based payment system in the fact that rams with higher EMD EBVs will produce offspring with more weight in the high value cuts like the rack. Using a retail price of $26 per kg of French rack, at a constant carcase weight, this equates to $3.38 difference between the progeny of the best and the worst ram just in this primal.

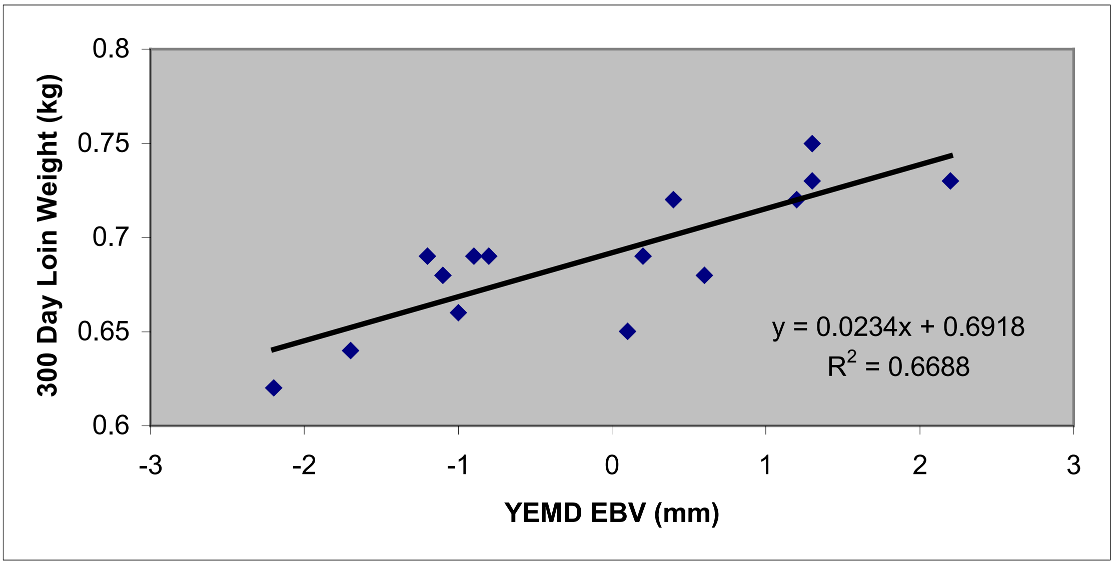


Figure 8b – Loin Weight vs. YEMD EBV

There is a strong positive relationship between YEMD EBV and 300-day loin weight in Figure 8b with loin weight increasing linearly with EBV. This suggests that using rams with high EMD EBVs will produce lambs with heavier loins which ultimately results in higher value carcases. Using a retail price of $35 per kg of loin, at a constant carcase weight, this equates to $5.25 difference between the progeny of the best and the worst ram just in this primal.

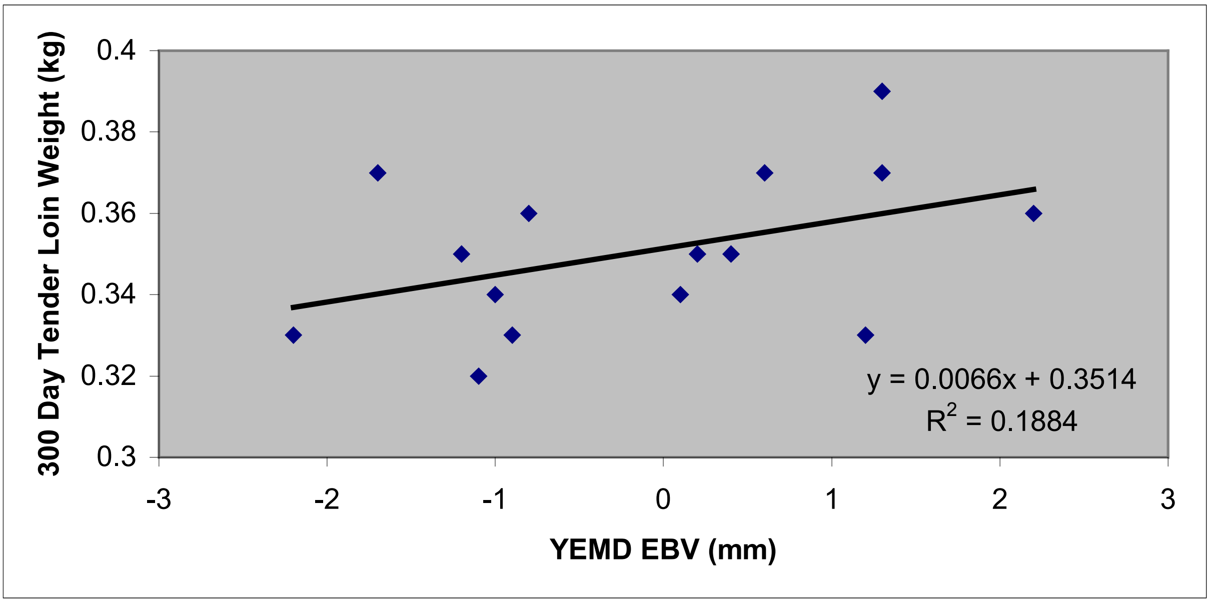


Figure 8c – Tenderloin Weight vs. YEMD EBV

As can been seen in Figure 8c, there appears to be a moderately positive relationship between EMD EBV and tenderloin weight with sires possessing higher EMD EBVs producing lambs with heavier Tenderloin weights and vice versa. Using a retail price of $30 per kg of tenderloin, at a constant carcase weight, this equates to $2.10 difference between the progeny of the best and the worst ram just in this primal.

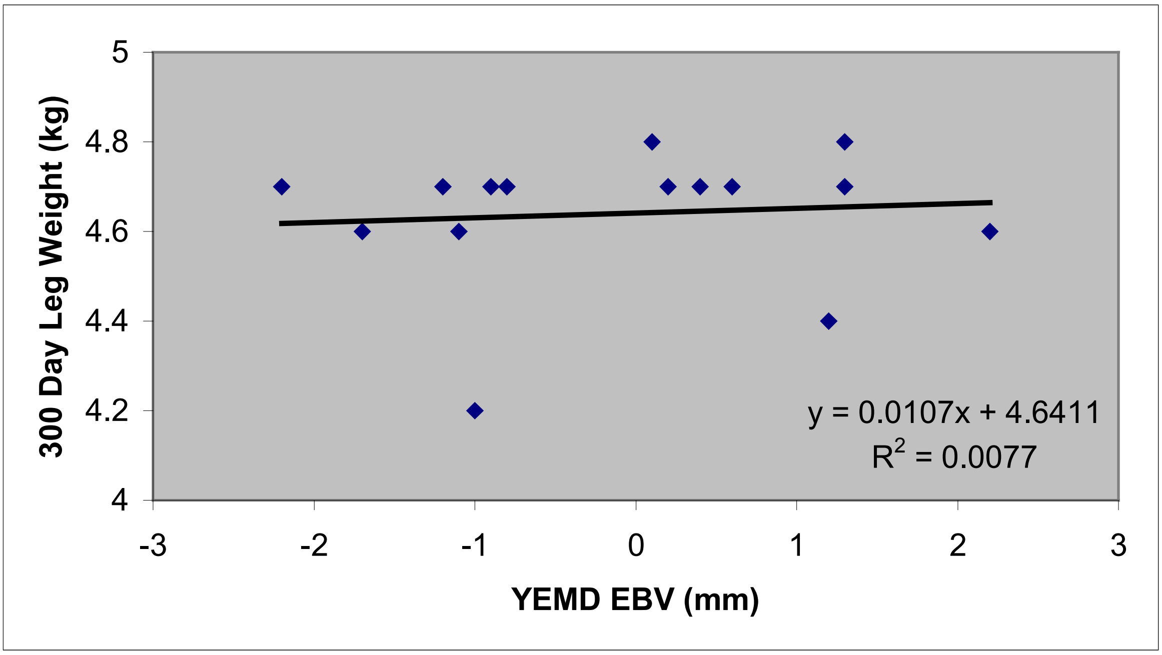


Figure 8d – Leg Weight vs. YEMD EBV

Figure 8d demonstrates a weak, slightly positive relationship between leg weight and YEMD EBVs. This suggests that EMD is not necessarily a good indicator of hindquarter muscularity or leg weight.

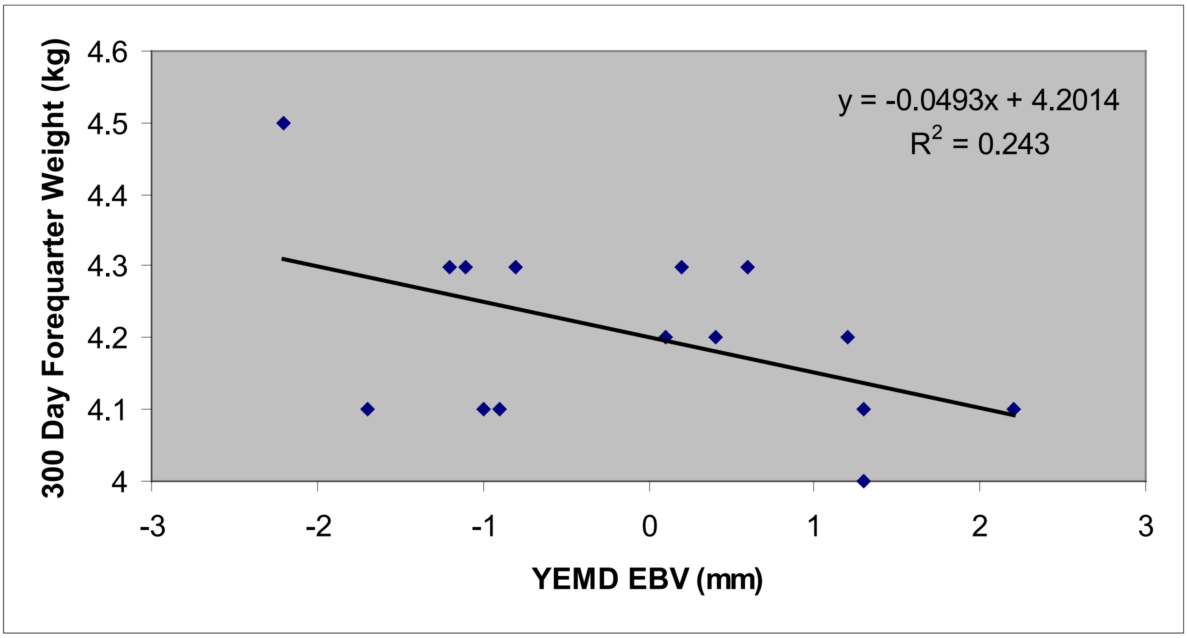


Figure 8e – Forequarter Weight vs. YEMD EBV

Figure 8e shows a moderate negative relationship between YEMD EBV and forequarter weight and in doing so suggests that sires with low EMD EBV produce more weight in the forequarter and based on the previous three graphs, less weight in the loin, resulting in lower value carcases.

In addition, based on a value of $10.90/kg for Boneless legs, there was $6.54 difference between the progeny group with heaviest and lightest legs just in the value of this cut. Furthermore, based on a retail value of $9.90 for boneless forequarter, there was a difference of $4.80 between the heaviest and lightest progeny group. Finally, shanks were valued at $3.50 each and trim was valued at $2.50/kg.

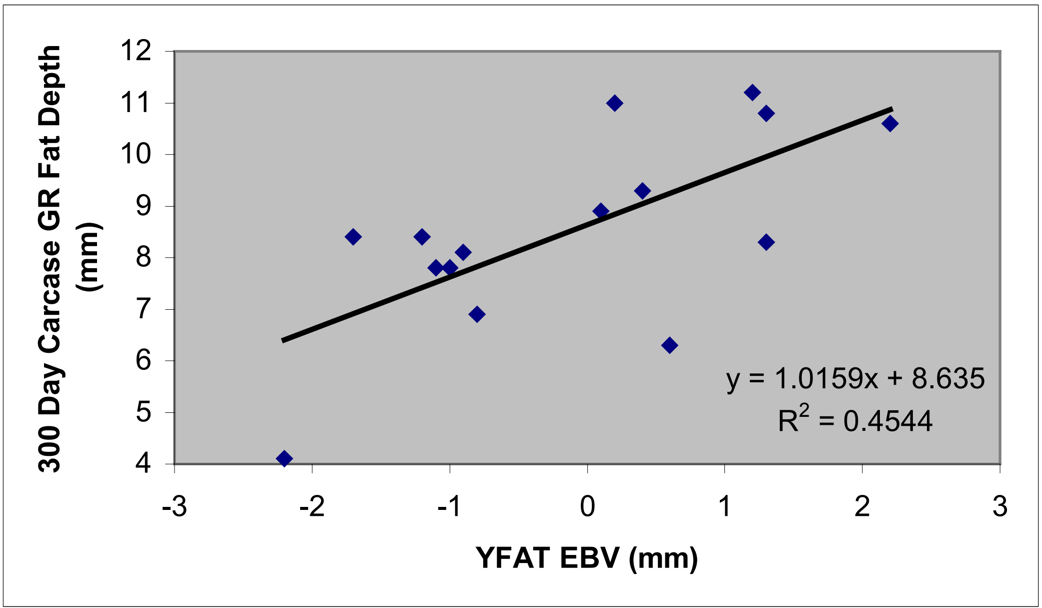


Figure 8f – GR fat depth vs. YFAT EBV

This figure shows a strong positive relationship between 300 day GR fat depth and YFAT EBVs illustrating how genetically fatter animals produce lambs with fatter carcases. Interestingly, this trial no sires produced lambs that were considered unacceptably fat.

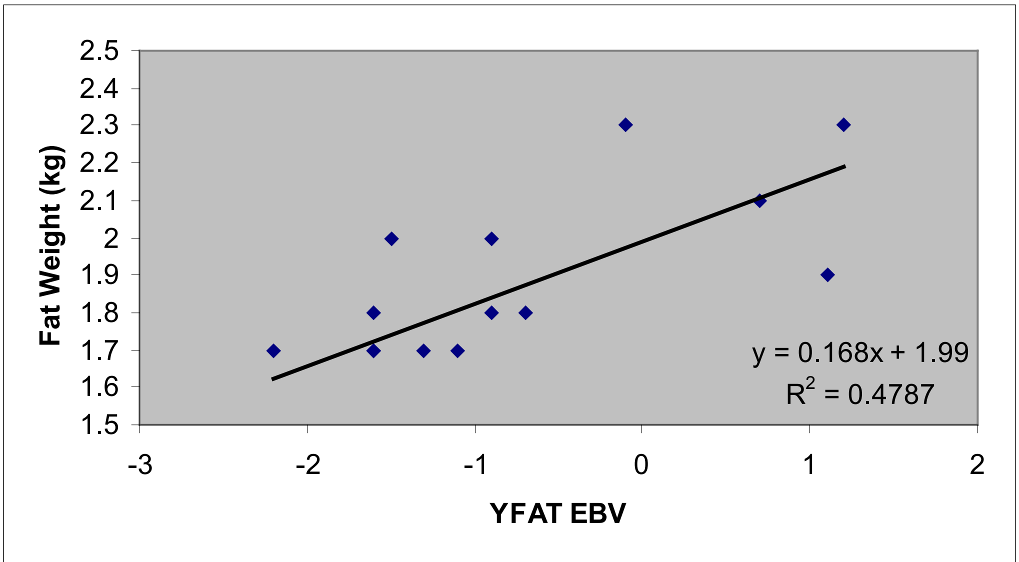


Figure 8g – Fat Weight vs. YFAT EBV

Similarly, there was a strong positive relationship between Fat weight and YFAT EBV suggesting that FAT EBVs are a good indicator of fat weight in the carcase.

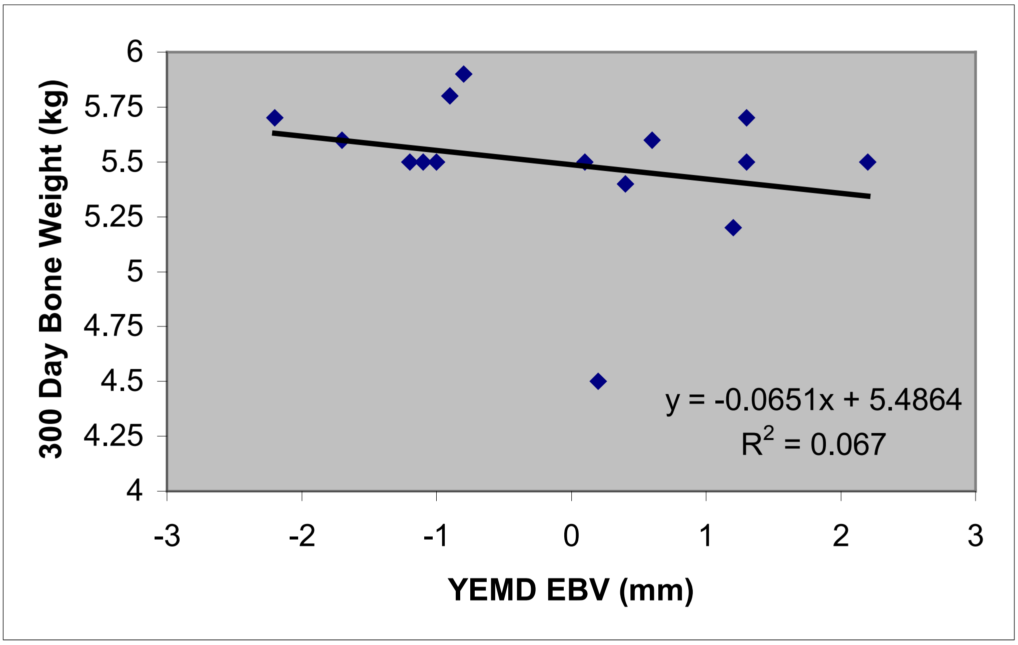


Figure 8h – Bone Weight vs. YEMD EBV

Figure 8h showed that there was a weak negative relationship between YEMD EBV and Bone weight. This shows that at a fixed carcase weight, animals that possess better genes for muscle have a lower proportion of bone in the carcase than animals with poorer genes for muscle. Hence, animals with superior genes for muscling produce carcases with a higher proportion of saleable meat.

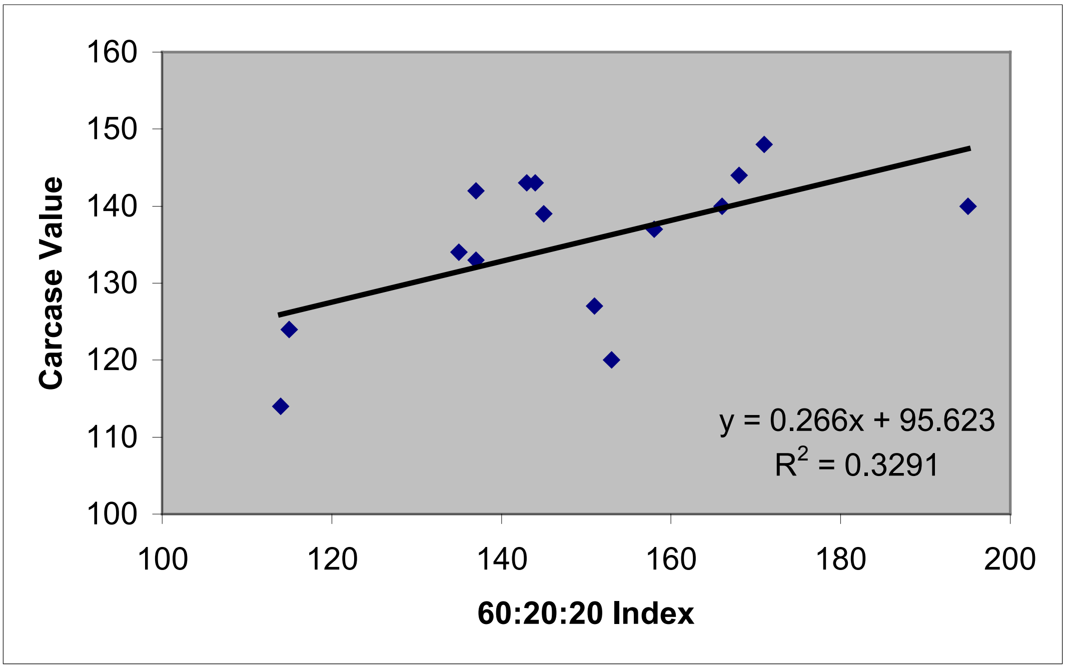


Figure 8i – Carcase Value vs. 60:20:20 Index

Figure 8i shows that there is a positive relationship between 60:20:20 index and carcase value at constant carcase weight when determined using separate values for each primal. This suggests that sires with higher 60:20:20 index values produce lambs with more weight in the high value cuts (loin, rack) and subsequently higher value carcases. The highest carcases were valued at $148 and the lowest at $114 (note that this high value is partly a reflection of the high lamb prices being received in 2004), which is a difference of $34 per lamb. When this is cumulated over the life of the animal, if used conservatively over 4 years producing 40 lambs per year this equates to $5,440 additional value over the life of the ram.

Analysis of Wool and Other Measures

Figure 9 – Skin Value vs. Wool Density

As can be seen in Figure 9, in the progeny produced in this trial there was no relationship between wool density and skin value as all skins received the same price. OFDA Data were also collected and it was shown that no sire produced an unacceptably high level of unacceptable fibres (objectionable) with the highest being 2.9%.

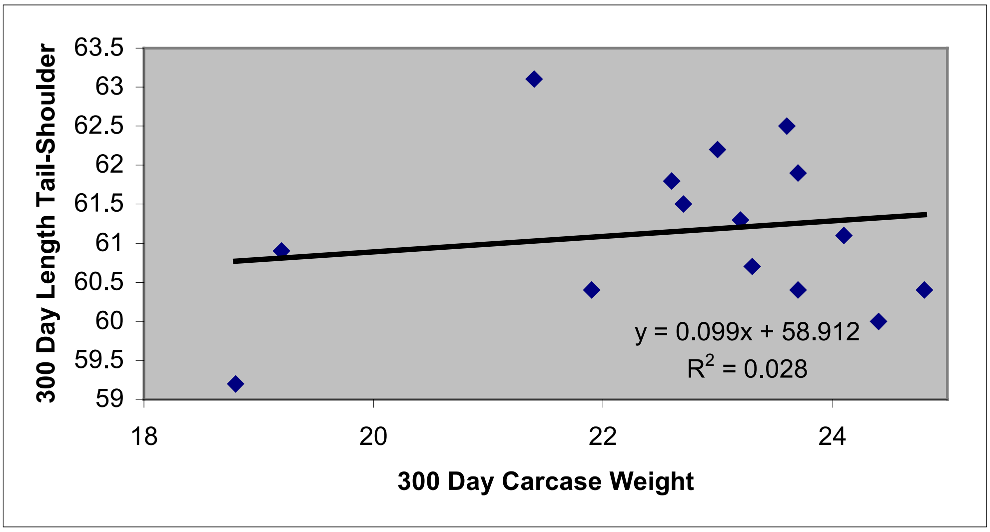


Figure 10a – Length vs. 300 Day Carcase Weight

In this study there appears to be little or no relationship between body length and carcase weight as is shown in Figure 10a. In addition, there was a weak positive relationship between length (tail-rib) and loin weight, shown in Figure 10b below.

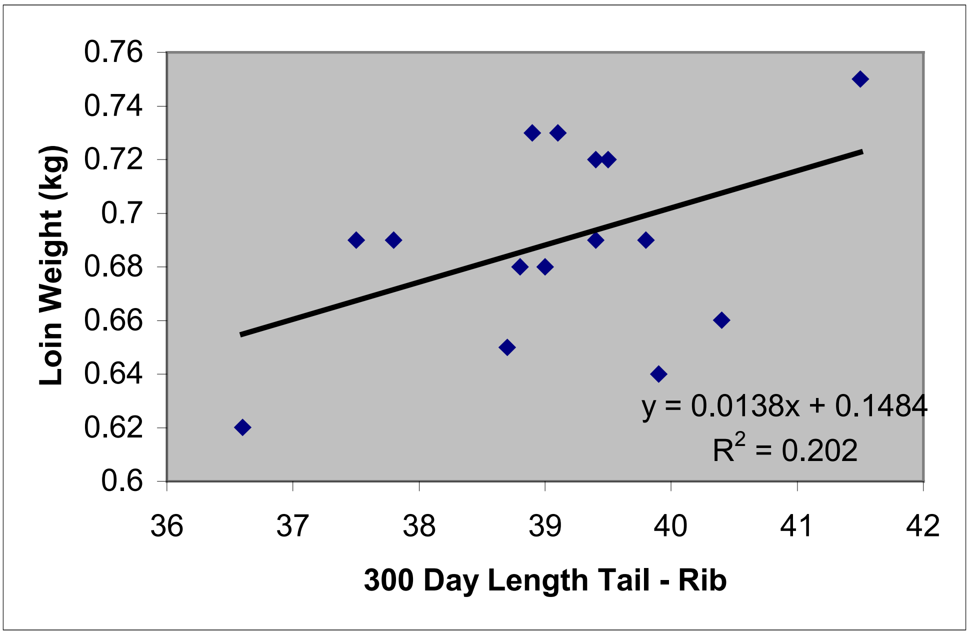


Figure 10b – Loin weight vs. 300 Day Length Tail – Rib

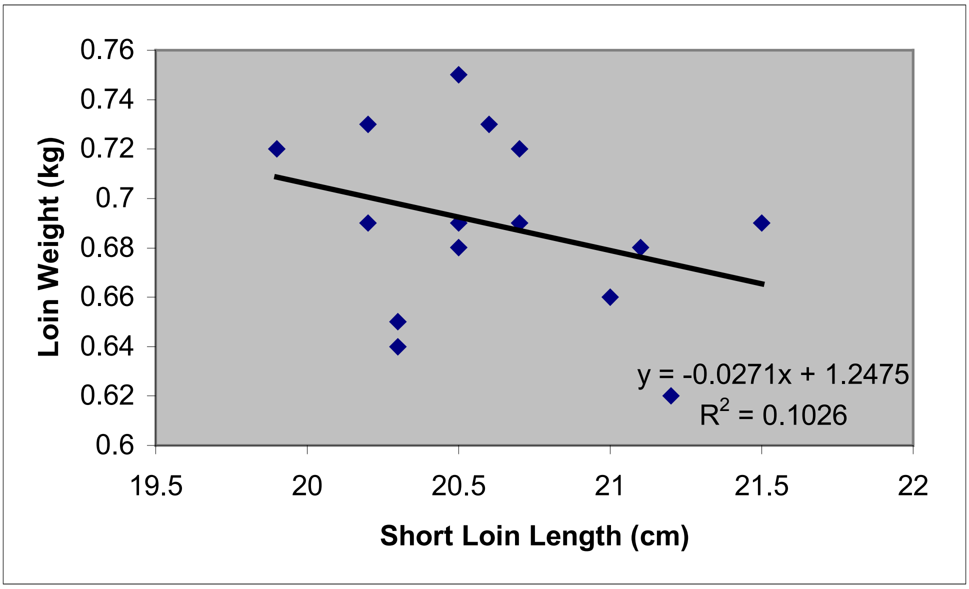


Figure 10c – Loin weight vs. Short Loin Length

Finally, there was a weak negative relationship between loin weight and short loin length suggesting that shorter loins are thicker and heavier.

Summary

Birth Traits
Generally, sires performed according to their birth weight EBVs and sires that produced heavier lambs generally had more lambing difficulty. Sires whose lambs had longer gestation resulted in heavier lambs.

Growth Pattern Analysis
There were marked differences in growth patterns between individual sires. Some sires showed that their progeny grew at a rate faster than average throughout the whole trial, other sires progeny grew slower than average throughout the whole trial. Certain sires grew slower at certain ages (early) and faster than average at other (later) ages.

Post Weaning and Yearling Carcase
Sires generally performed in accordance with their EBVs for fat and muscle measures with a moderate to strong positive relationship existing between the EBV and the corresponding carcase measure at that age. The correlation between carcase measures at post weaning age (200days) and yearling age (365 days) is not 1. Hence for breeders wishing to provide accurate information to their clients at both ages (e.g. Domestic vs. Export market), measuring these traits multiple times will be beneficial.

Carcase Measures at Slaughter
There were strong positive relationships between carcase measures at slaughter and EBVs. For example, sires with high EMD EBVs generally produced lambs with more weight in the loin, rack and tenderloin while sires with negative Fat EBVs generally produced lambs with less fat in the carcase. This highlights the impact of superior carcase EBVs on value based payment systems as these rams will put more weight into the high value cuts (higher value carcases) and less fat (higher red meat yield) which results in a higher premium from each carcase produced by sires with better carcase EBVs. This was further highlighted when the carcase value of each lamb was calculated, where a difference of $34 per lamb was seen between the highest and lowest value progeny groups which equates to $5,440 additional value over the life of the sire.

Other Traits
Many sires had very low accuracy for FEC. This highlights the potential need for breeders who have clients in worm prone areas to test their rams for FEC.

Analysis of the wool traits showed that there was no impact on skin value between sires with different genetic makeup, in addition there were no sires that produced unacceptably high levels of medullation suggesting that all rams in the trial were acceptable.

There was little or no relationship between animal length and carcase weight or loin weight.

Appendix A – Retail Value of Carcase primals as of August 2004

Primal	$/kg
Short Loin (Backstrap)	35
Tenderloin (Fillet)	30
Frech Rack (cap off)	26
Boneless Legs	10.90
Boneless Forequarter (shank off)	9.90
Trim	2.50
Shanks	2.50 each
Fat, Bone	Rendering products

* **provided by Struan Meats**

Appendix B – Sire solutions, standard errors and model fitted – Live Traits

Sire	Leah20	AV119	W612	G10	A50	LAM6	DG343	ALK47	DG100	LE1147	K211	B904	W8017	WA15	IV154
BWT	4.1	4.4	4.8	4.5	4.1	5.1	4.6	4.6	4.4	4.5	4.3	5.3	4.1	4.6	4.8
SE	0.18	0.22	0.19	0.22	0.19	0.20	0.21	0.23	0.21	0.25	0.21	0.20	0.23	0.22	0.19
BWT ~ mean + sex + birth type															
GESTLENGTH	149.0	149.9	149.6	148.8	148.8	151.2	149.7	149.5	148.5	149.8	150.9	151.6	149.5	150.6	151.2
SE	0.36	0.45	0.40	0.45	0.38	0.41	0.43	0.47	0.43	0.51	0.44	0.40	0.48	0.45	0.38
Gestation Length ~ Mean + birth type															
PWFAT	3.7	3.5	3.4	3.9	3.3	3.3	3.5	3.5	3.0	3.5	3.5	3.1	3.1	3.5	3.3
SE	0.08	0.11	0.10	0.13	0.11	0.10	0.11	0.13	0.17	0.13	0.10	0.11	0.15	0.11	0.12
PWFAT ~ mean + sex + pwweight															
YFAT	4.7	4.6	4.5	5.1	4.6	4.7	4.7	4.7	4.3	4.7	4.7	4.5	4.6	4.6	4.4
SE	0.08	0.10	0.09	0.12	0.11	0.09	0.11	0.13	0.16	0.12	0.10	0.11	0.15	0.10	0.11
YFAT ~ mean + sex + yweight															
PWEMD	23.5	23.5	23.7	24.0	22.5	22.7	22.8	21.8	22.1	22.3	24.7	22.3	23.5	23.5	23.6
SE	0.27	0.34	0.31	0.40	0.34	0.30	0.36	0.42	0.53	0.40	0.32	0.35	0.48	0.34	0.37
PWEMD ~ mean + sex + pwweight															
YEMD	29.0	29.0	29.4	29.7	28.4	28.6	28.3	27.9	27.9	28.0	29.7	28.6	29.0	29.1	29.1
SE	0.38	0.44	0.41	0.43	0.44	0.39	0.46	0.52	0.61	0.49	0.42	0.44	0.57	0.43	0.41
YEMD ~ mean + sex + yweight															
PWFEC	505	529	460	464	475	551	673	645	388	484	258	155	247	384	445
SE	104	121	115	121	120	110	131	138	167	142	118	127	159	123	118
PWFEC ~ mean + rear type															

Sire solutions, standard errors and model fitted – Carcase Traits

Sire	Leah20	AV119	W612	G10	A50	LAM6	DG343	ALK47	DG100	LE1147	K211	B904	W8017	WA15	IV154
RACK WT	1.09	1.12	1.08	1.11	1.01	1.07	1.05	1.11	1.02	0.99	1.11	1.06	1.11	1.07	1.10
SE	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.05	0.03	0.02	0.03	0.03	0.02	0.03
RACK WT ~ mean + carcase weight															
LOIN WT	0.72	0.69	0.72	0.75	0.69	0.68	0.64	0.69	0.62	0.66	0.73	0.69	0.68	0.65	0.73
SE	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.03	0.04	0.03	0.02	0.02	0.03	0.02	0.02
LOIN WT ~ mean + carcase weight															
TLOIN WT	0.33	0.35	0.35	0.37	0.35	0.32	0.37	0.33	0.33	0.34	0.36	0.36	0.37	0.34	0.39
SE	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02	0.02
TENDER LOIN WT ~ mean + carcase weight															
LEG WT	4.4	4.7	4.7	4.7	4.7	4.6	4.6	4.7	4.7	4.2	4.6	4.7	4.7	4.8	4.8
SE	0.06	0.07	0.07	0.09	0.08	0.08	0.08	0.10	0.14	0.10	0.06	0.08	0.09	0.07	0.08
LEG WT ~ mean + carcase weight															
FOREQ WT	4.2	4.3	4.2	4.1	4.3	4.3	4.1	4.1	4.5	4.1	4.1	4.3	4.3	4.2	4.0
SE	0.09	0.11	0.10	0.13	0.12	0.12	0.12	0.15	0.21	0.15	0.10	0.12	0.13	0.10	0.12
FOREQUARTER WT ~ mean + carcase weight															
CARC GR	11.2	11.0	9.3	10.8	8.4	7.8	8.4	8.1	4.1	7.8	10.6	6.9	6.3	8.9	8.3
SE	0.72	0.97	0.79	1.06	1.00	0.98	0.97	1.24	2.37	1.21	0.80	0.97	1.07	0.84	0.97
CARCASE GR DEPTH ~ mean + carcase weight															
CARC FAT WT	2.3	1.7	1.8	2.1	1.8	1.7	2.0	1.9	1.3	2.3	2.0	1.7	1.8	1.7	1.7
SE	0.11	0.14	0.12	0.17	0.16	0.15	0.15	0.19	0.26	0.19	0.12	0.15	0.17	0.13	0.15
CARCASE FAT WT ~ mean + carcase weight															
BONE WT	5.2	4.5	5.4	5.5	5.5	5.5	5.6	5.8	5.7	5.5	5.5	5.9	5.6	5.5	5.7
SE	0.10	0.12	0.11	0.15	0.14	0.14	0.13	0.17	0.23	0.17	0.11	0.13	0.15	0.12	0.13
BONE WT ~ mean + carcase weight															
CARCASE VALUE	127	137	139	143	120	143	134	114	124	142	140	133	148	140	144
SE	5.01	6.28	5.54	7.43	6.79	6.79	7.43	8.31	11.76	8.31	5.54	6.78	7.43	5.88	6.79
CARCASE VALUE ~ mean															
CARCASE VALUE	133	137	138	139	135	133	134	136	132	129	138	134	138	135	141
SE	1.15	1.43	1.13	1.70	1.60	1.56	1.69	1.98	2.67	1.92	1.26	1.54	1.71	1.34	1.54
CARCASE VALUE ~ mean + carcase weight															

Appendix C – EBVs and Indexes for each sire - 1/11/03 Across Flock Run

	EBVS								Indexes	
Sire	Bwt	Wwt	Pwt	Pfat	Pemd	Ywt	Yfat	Yemd	C+	60:20:20
Leah20	0.2	5.8	13.9	1.0	1.4	9.7	1.2	1.2	182	151
AV119	-0.2	5.4	11.3	-0.7	0.5	9.5	-1.6	0.2	184	158
W612	0.8	3.6	8.4	-1.0	1.1	6.5	-0.9	0.4	178	145
G10	-0.2	2.3	2.9	1.6	2.5	2.1	0.7	1.3	117	143
A50	0.5	9.0	15.0	-0.6	-0.3	13.4	-1.6	-1.2	197	153
LAM6	0.0	4.6	9.2	-0.8	-0.4	6.9	-1.1	-1.1	165	144
DG343	0.6	6.4	12.2	-0.8	-0.7	11.4	-0.9	-1.7	180	135
ALK47	0.6	6.4	9.4	1.2	-0.7	8.8	1.1	-0.9	130	114
DG100	0.3	5.0	7.2	-0.9	-3.0	7.1	-1.7	-2.2	128	115
LE1147	0.6	10.0	14.0	0.4	-0.7	13.3	-0.1	-1.0	171	137
K211	0.0	6.5	11.8	-0.7	2.2	10.0	-1.5	2.2	205	195
B904	0.7	4.5	8.1	-1.7	-0.7	6.6	-2.2	-0.8	170	137
W8017	0.0	7.0	12.3	-0.1	0.5	12.6	-0.7	0.6	181	171
WA15	0.2	7.5	13.8	-0.8	0.2	11.4	-1.3	0.1	199	166
IV154	0.2	4.0	7.0	-1.8	2.3	5.9	-1.6	1.3	195	168