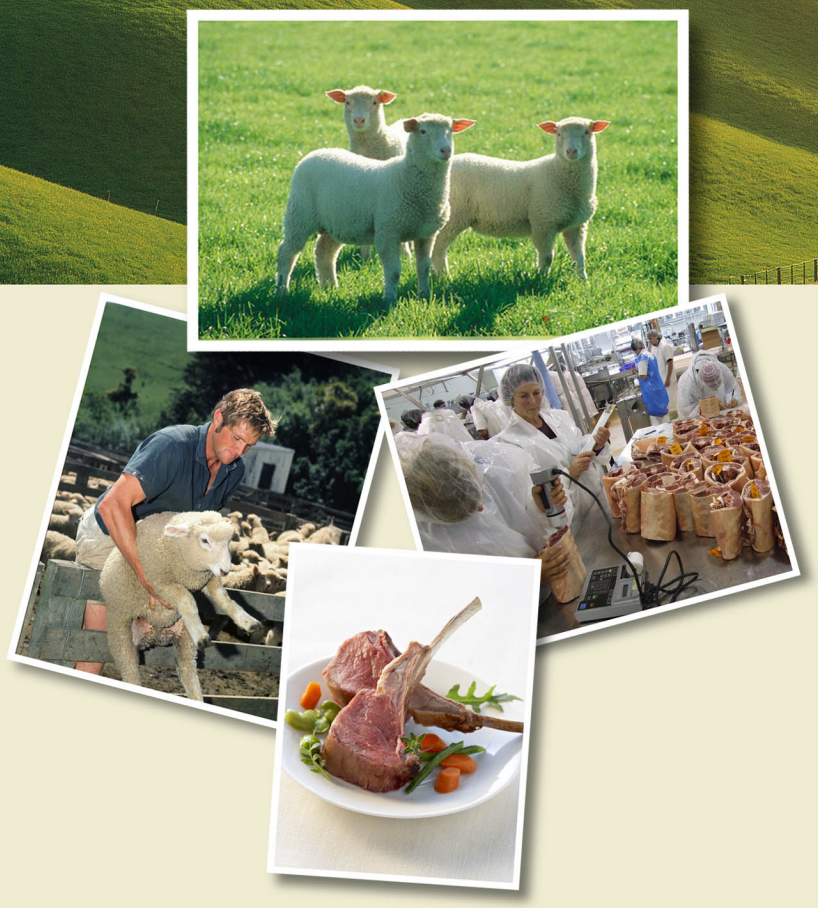
Central Progeny Test Results 2008/2009



MEAT & WOOL NEW ZEALAND

With the support of

Alliance Group

In conjunction with

ABACUSBIO LIMITED

agresearch

LINCOLN UNIVERSITY
Te Whare Wānaka O Aoraki

On-Farm Research

TABLE OF CONTENTS

KEY:

Sites: A = Ashley Dene
W = Woodlands
P = Poukawa

Years: 98 = 1998/1999 season
99 = 1999/2000 season
00 = 2000/2001 season
01 = 2001/2002 season
02 = 2002/2003 season
03 = 2003/2004 season
04 = 2004/2005 season
05 = 2005/2006 season
06 = 2006/2007 season
07 = 2007/2008 season
08 = 2008/2009 season

BV	Breeding value	GGT21	Facial Eczema
EMA	Eye Muscle Area	NLB	Number of lambs born
FEC or WormFEC	Faecal Egg Count	FW12	Fleece weight at 12 months of age

The results presented in this booklet comprise the top terminal and top dual purpose rams for each index or trait. The Central Progeny Test Growth Index is based on weaning weight and carcass weight breeding values. The Central Progeny Test Meat Value Index is based on the breeding values for weight of meat in the leg, loin and shoulder lean as measured by VIAscan®.

For information relating to the Meat & Wool New Zealand Central Progeny Test or, if you want Central Progeny Test results presented to a farmer's meeting, contact:

Dr Andy Bray
Meat & Wool New Zealand
Level 13, PWC Tower
113-119 The Terrace
P O Box 121
Wellington 6015

Phone: (04) 474 0693
Email: andy.bray@meatandwoolnz.com

INTRODUCTION

Background
Progeny tests are used to 'prove' the genetics of a ram by comparing how his progeny perform relative to progeny from other rams under the same conditions. Rams can be compared across multiple flocks through use of rams in common across sites (often called reference sires) that create genetic connections between flocks. However, there are good reasons to run a progeny test at a central location, usually termed a "central progeny test". Reasons include facilitating comparisons of rams that would not normally be made in industry, and the use of novel or expensive measurement methods.

Objectives
The Meat & Wool New Zealand Central Progeny Test has four objectives:

- Identify sources of high performing rams by extending and strengthening comparisons across flocks and breeding groups
- Develop genetic parameters for, and industry understanding of, novel traits
- Foster links between ram breeding groups
- Provide a genetic resource for add-on projects of value to meat and wool farmers and allied industries

This report addresses the first objective.

The Central Progeny Test was not set up as a breed comparison, but rather as a **ram** comparison. It has focused on identifying the best genetics regardless of breed. Breed comparisons require testing many randomly selected rams per breed, with few progeny per ram. The Central Progeny Test has used a small number of rams, with a greater number of progeny per ram, from as many breeds as possible, to improve genetic connections within the New Zealand sheep industry.

Genetic connections between breeding groups established through the Central Progeny Test have been used in large scale evaluations performed across flocks and across breeds by Sheep Improvement Ltd (SIL). These are the "SIL-ACE" (SIL Advanced Central Evaluation; www.sil.co.nz/Latest-reports.aspx) evaluations. Central Progeny Test data has provided critical genetic connections for this to be undertaken.

History of the Central Progeny Test
In 2002, the "Alliance CPT®" was established at Woodlands, in Southland, with significant investment from the Alliance Group and the collaboration of AgResearch, SIL and AbacusBio. Terminal sire and dual purpose rams were sourced from industry and mated to Coopworth or Coopworth-cross ewes. Lambs were assessed for growth rate and carcass merit, making use of Alliance's VIAscan® technology for carcass assessment. This was repeated in 2003, with the addition of a second site at Ashley Dene in collaboration with Lincoln University. Lambs continued to be assessed for growth rate and carcass merit.

In 2004 there was a change to include maternal traits for dual purpose rams. Dual purpose rams were mated to sufficient ewes to generate female progeny to be retained for assessment of maternal traits. Surplus females and all male lambs were assessed for growth rate and carcass merit. Funding for the work with female progeny was provided by Meat & Wool New Zealand. In 2005 a third site was established at Poukawa (Hawkes Bay) with On-Farm Research and historic weaning and carcass weight data from the Poukawa Elite Lamb programme (1998 to 2004) were added to the analysis.

From 2005, matings and measurements have been carried out using the same protocols at all three sites. Funding for the Central Progeny Test is now provided by Meat & Wool New Zealand and the programme is known as the M&WNZ Central Progeny Test. The results in the following tables are based on analysis of data from all rams evaluated to date. Results are presented as two indexes (Central Progeny Test Growth Index and Central Progeny Test Meat Value Index) and individual breeding values for traits of interest.

Changes to the presentation of results for 2008/2009 born progeny
There have been no changes to the traits presented or the format of the results compared to last year's results booklet. A ram 'aging' policy was introduced last year, whereby rams that are older than ten years of age **and** have no progeny born in SIL-recorded flocks in the last four years are not listed regardless of their ranking. This means that the rams listed are currently, or were recently, available.

Within this booklet, SIL across-flock breeding values have been calculated from an across flock analysis of the three Central Progeny Test flocks for weaning weight; WormFEC and fleece weight. SIL-ACE breeding values (i.e. including data outside the Central Progeny Test) are used where the breeding value needs greater numbers of records to improve the accuracy of breeding values, namely for number of lambs born and facial eczema breeding values. All other breeding values are estimated using Central Progeny Test data in stand-alone analyses. These include breeding values for the traits: hindleg lean; loin lean; shoulder lean; carcass weight; and eye muscle area.

As for last year, the breeding values for the traits dressing percentage, pH, meat colour and fat colour are presented only in the table of the top 20 dual purpose and terminal sire rams overall. They will continue to be measured so that the genetic relationships between these quality traits and growth and yield traits can be monitored.

In all of the dual purpose results tables (with the exception of the number of lambs born table) there is a ram called "1980s Sires". These are the average results for a group of five leading Romney rams from the early 1980s that the Central Progeny Test obtained using semen held in storage by AgResearch. The results are interesting in that they give an indication of the genetic improvement that has accumulated over the last three decades.

HOW TO UNDERSTAND CENTRAL PROGENY TEST RESULTS

This booklet contains breeding values and indexes for rams used in the Alliance CPT® and M&WNZ Central Progeny Test. In addition, rams used in the Elite Lamb programme at Poukawa from 1998 to 2004 have been included for the evaluation of growth. A total of 169 rams have been evaluated in the Central Progeny Test to date, and the breeding values for the **top 25 terminal sire and top 25 dual purpose rams** are presented for each trait or index.

A breeding value is an estimate of the animal's true genetic worth, or the value of a parent's genes, half of which are passed on to its offspring. A breeding value does not necessarily reflect the observed performance of the animal itself because the observed performance is a combination of both the animal's genes and effects of the environment it has been raised in.

Breeding values that were sourced from SIL or SIL-ACE (i.e. weaning weight, WormFEC, numbers of lambs born and facial eczema) are adjusted so the average of animals born in 1995 was zero. Central Progeny Test breeding values and indexes presented here are given as deviations from an average of zero, which means that half of the rams tested will have negative breeding values.

To give an example of how to use a breeding value, if a ram has a breeding value of +1.0kg for weaning weight, we would expect the progeny to be 0.5 kg heavier at weaning (the sire provides half of the genes) than the progeny of the average ram in the Central Progeny Test. Likewise, if a ram has a breeding value of -1.0kg for weaning weight, we would expect his progeny to be 0.5kg lighter than the Central Progeny Test average. A negative breeding value for weaning weight does not necessarily mean that the ram is poor for growth rate, e.g. many dual purpose rams do not have the high growth rates found in the terminal sire breeds because they have been selected for many other traits. Thus, some of the better dual purpose rams for growth have negative breeding values because higher values are more likely to be for terminal sire rams.

A breeding index is simply a way of adding together the breeding values for a number of traits, but with an economic weighting applied to each breeding value so that the best economic response is achieved. For example, the Central Progeny Test Growth Index is a combination of the weaning weight and carcass weight breeding values.

Some Central Progeny Test breeding values and indexes differ from those produced by the SIL genetic evaluation system in several ways. Firstly, the Central Progeny Test collects additional measurements which are not routinely collected in the wider industry. For example, the Central Progeny Test Meat Value Index is based on the weight of meat in each of the hindleg, loin and shoulder cuts as measured by the VIAscan® grading system. Secondly, the breeding values for meat traits are calculated at a fixed carcass weight, whereas SIL breeding values are calculated at a fixed age.

For further information on breeding values, indexes and selection, visit the SIL website (www.sil.co.nz). Follow the link to "Technical Information" to find the SIL Users Manual and a number of technical documents.

Historical weaning and carcass weight data are included from the Poukawa Elite Lamb programme making it possible to include these rams in the Central Progeny Test Growth Index. This is the only table that they occur in, and they are marked with a hash (#) to indicate their source.

Central Progeny Test results are also available to download on the M&WNZ website (www.meatandwoolnz.com; follow the links "Farming and Research" and "Central Progeny Test" results.

CENTRAL PROGENY TEST GROWTH INDEX ($)

Terminal: **Range: -$1.07 to $3.89**

TAG	Flock	Breed	Sites	Progeny	Growth Index	Rank
241/04	**Poll Dorset Breed Society**	**Poll Dorset**	**A08**	**33**	**3.89**	**1**
447/03	Blackdale Stud	Texel	P06	42	3.32	2
430/03	**Glengarry**	**Poll Dorset**	**A05 P05 W05**	**123**	**3.18**	**3**
570/06	Glengarry MegaMeat	Poll Dorset	P08	83	3.11	4
25/99	**Tyanee**	**Suffolk**	**Link sire**	**717**	**2.91**	**5**
17/02	Tyanee	Suffolk	P06	98	2.79	6
4012/99	**Bilberry Oaks**	**Hampshire**	**W02 W03**	**51**	**2.77**	**7**
231/97	Bankhead	Southdown	A05	51	2.60	8
767/99	**Darrenal**	**Dorset Down**	**A03 E03**	**14**	**2.55**	**9**
299/01	Ohio	Poll Dorset	E03 A04 E04	70	2.52	10
275/04	**Goldstream**	**Suffolk**	**A07**	**68**	**2.49**	**11**
*128/97	Punchbowl	Suffolk	E02 W03	113	2.30	12
33/04	**Myola**	**South Suffolk**	**P06**	**56**	**2.25**	**13**
530/05	Grasmere	Texel	P08	38	2.17	14
191/04	**Winiata**	**Dorset Down**	**P05**	**93**	**2.10**	**15**
120/00	Glendhu	Dorset Down	W03	34	1.96	16
1010/03	**Punchbowl**	**Suffolk**	**W07**	**41**	**1.95**	**17**
11/03	Goldstream	Suffolk	P05	24	1.92	18
514/00	**Linton**	**Poll Dorset**	**W04**	**46**	**1.92**	**19**
48/05	Premier Suffolk	Suffolk	W08	36	1.88	20
35/01	**Glengarry**	**Poll Dorset**	**A03 E03 W03**	**39**	**1.85**	**21**
49/05	MegaMeat	Poll Dorset	P07	80	1.80	22
61/04	**Twin Farm**	**Suffolk**	**W06**	**30**	**1.74**	**23**
25/02	Glenaven	Hampshire	W04	40	1.72	24
31/02	**Kaya Dorper**	**Dorper**	**A05 P07**	**99**	**1.68**	**25**
130/05	Bellview	Dorset Down	A07	76	1.61	26
D244/05	**Hawea Farm**	**Poll Dorset/Texel**	**P07**	**101**	**1.57**	**27**
44/02	WTD	Texel	P05	49	1.55	28
911/99	**Murray Downs**	**Texel**	**W03**	**31**	**1.47**	**29**
3/04	Egilshay	Texel	A08	68	1.40	30

This index is a terminal sire growth index based on weaning and carcass weight breeding values.

CENTRAL PROGENY TEST GROWTH INDEX ($)

Dual Purpose: **Range: -$3.78 to $2.61**

TAG	Flock	Breed	Sites	Progeny	Growth Index	Rank
D110/04	**Blackdale Stud**	**Textra**	**W07**	**105**	**2.61**	**1**
50394/06	Kelso	Composite	A08	21	1.78	2
23253/05	**Longdowns**	**Composite**	**W08**	**21**	**0.79**	**3**
742/04	Cairnlea	Coopworth	W07	103	0.46	4
232/01	**TRIGG**	**Romney**	**W03**	**20**	**0.40**	**5**
777/05	Tamlet	Coopworth	W08	35	0.39	6
301/04	**Hazeldale**	**Perendale**	**A08**	**21**	**0.22**	**7**
1233/02	SRDG	Romney	W08	14	0.14	8
358/04	**MNCC**	**Coopworth**	**P07**	**110**	**0.11**	**9**
542/04	Hazeldale	Perendale	W06	29	0.05	10
5093/99	**Meadowslea**	**Romney**	**A03**	**22**	**0.00**	**11**
426/99	Mt Guardian	Perendale	W03	22	-0.01	12
HG552/02	**Clifton**	**Corriedale**	**A05**	**57**	**-0.03**	**13**
2247/04	Rosedale	Growbulk	W07	86	-0.16	14
55/01	**Bonnieview**	**Perendale**	**W05**	**20**	**-0.20**	**15**
D611/04	Glenovis	Corriedale	A07	112	-0.23	16
300/03	**MNCC**	**Coopworth**	**W05**	**27**	**-0.23**	**17**
97/02	Raywell	Borderdale	A03 A04	52	-0.23	18
493/00	**Hazeldale**	**Perendale**	**W03**	**23**	**-0.37**	**19**
172/02	Glenrannoch	Perendale	A04	34	-0.37	20
2135/99	**Rosedale**	**Growbulk**	**W03**	**30**	**-0.38**	**21**
132/01	Kelso	Composite	W03	31	-0.47	22
833/02	**Tamlet**	**Coopworth**	**W05 W06**	**55**	**-0.48**	**23**
531/98	Wharetoa	Coopworth	W03	29	-0.57	24
627/01	**TRIGG**	**Romney**	**A06**	**72**	**-0.60**	**25**
5203/04	Marlow	Coopworth	W08	14	-0.69	26
1235/00	**Strathblane**	**Corriedale**	**A04**	**30**	**-0.71**	**27**
1035/02	Newhaven	Perendale	W04	32	-0.73	28
781/00	**Shoreford**	**Romney**	**W03**	**30**	**-0.73**	**29**
138/01	Edale	Growbulk	A03	38	-0.75	30
5 sires	***1980s sires***	***Romney***	***W07***	***41***	***-1.84***	***60***

This index is a terminal sire growth index based on weaning and carcass weight breeding values.

CENTRAL PROGENY TEST MEAT VALUE INDEX ($)

Terminal: **Range: -$2.24 to $5.57**

TAG	Flock	Breed	Sites	Progeny	Meat Value Index	Rank
530/05	**Grasmere**	**Texel**	**P08**	**38**	**5.57**	**1**
299/00	Landcorp	Texel	W02 W03	58	3.50	2
110/03	**Murray Downs**	**Texel**	**W05**	**37**	**2.74**	**3**
275/04	Goldstream	Suffolk	A07	50	2.73	4
XA2/99	**The Burn**	**Texel**	**W02**	**22**	**2.45**	**5**
101/03	Landover	Texel	W07	17	2.37	6
114/03	**Kepler Supreme**	**Composite**	**A05**	**33**	**2.32**	**7**
52/04	Mount Linton	Suftex	W06	32	2.26	8
299/01	**Ohio**	**Poll Dorset**	**A04**	**34**	**2.25**	**9**
44/02	WTD	Texel	P05	50	2.06	10
911/99	**Murray Downs**	**Texel**	**W03**	**31**	**2.06**	**11**
1296/03	Mount Linton	Texel Cross	W05	41	1.91	12
400/00	**Brandes Burton**	**Texel**	**W02 W04**	**62**	**1.87**	**13**
570/06	Glengarry MegaMeat	Poll Dorset	P08	83	1.85	14
122/05	**Blackdale Stud**	**Texel**	**W08 R08**	**63**	**1.76**	**15**
48/05	Premier Suffolk	Suffolk	W08	36	1.61	16
021/01	**Broken Hut**	**Texel**	**A03**	**29**	**1.54**	**17**
269/04	Dorper	Dorper	W08	41	1.51	18
70/01	**Torresdale**	**Suffolk**	**W05**	**40**	**1.45**	**19**
T210/04	Wharetoa	Meatmaker	W06	34	1.38	20
25/99	**Tyanee**	**Suffolk**	**Link sire**	**543**	**1.37**	**21**
T369/02	Wharetoa	Composite	A03	28	1.32	22
76/05	**NZ Suffolk**	**Suffolk**	**P08**	**101**	**1.29**	**23**
18/02	Brandes Burton	Texel	A07	57	1.28	24
89/05	**South Suffolk Breed Society**	**South Suffolk**	**A08**	**28**	**1.24**	**25**

Dual Purpose: **Range: -$3.33 to $3.10**

TAG	Flock	Breed	Sites	Progeny	Meat Value Index	Rank
D110/04	**Blackdale Stud**	**Textra**	**W07**	**39**	**3.10**	**1**
4203/02	Kelso	Composite	P06	39	1.90	2
50394/06	**Kelso**	**Composite**	**A08**	**21**	**1.33**	**3**
386/03	Rene	Perendale	A07	27	1.23	4
88/02	**TRIGG**	**Romney**	**W05**	**25**	**1.04**	**5**
23253/05	Longdowns	Composite	W08	21	0.88	6
542/04	**Hazeldale**	**Perendale**	**W06**	**29**	**0.72**	**7**
401/05	Hazeldale	Perendale	W08	38	0.72	8
431/04	**Twin Farm**	**TEFRom**	**W07**	**22**	**0.64**	**9**
132/01	Kelso	Composite	W03	31	0.42	10
358/04	**MNCC**	**Coopworth**	**P07**	**43**	**0.42**	**11**
34/02	Wai-Iti Romneys	Romney	P06	25	0.34	12
781/00	**Shoreford**	**Romney**	**W03**	**30**	**0.30**	**13**
627/01	TRIGG	Romney	A06	72	0.27	14
11/01	**Little River**	**Cheviot**	**A03 W03**	**60**	**0.25**	**15**
138/01	Edale	Growbulk	A03	34	0.24	16
301/04	**Hazeldale**	**Perendale**	**A08**	**21**	**0.16**	**17**
55/01	Bonnieview	Perendale	W05	20	0.15	18
574/06	**Kylemore**	**Perendale**	**A08**	**20**	**0.12**	**19**
84/04	ARDG Elite	Romney	P07	31	0.10	20
34/01	**Twin Farm**	**TEFRom**	**W03 W06**	**51**	**0.05**	**21**
774/02	Flockton	Perendale	A04	37	0.04	22
211/99	**Blackdale Stud**	**Coopworth**	**W03**	**29**	**-0.01**	**23**
1560/03	The Gree	Greeline	W06	24	-0.05	24
JL1695/1	**WRIG**	**Romney**	**P05**	**36**	**-0.07**	**25**
5 sires	*1980s sires*	*Romney*	*W07*	*18*	*-0.77*	*40*

The relative value for meat in the loin was 4x that of meat in the shoulder and 2x that of meat in the hindleg.

WEANING WEIGHT BV (KG)

Terminal: **Range: -1.29 to 4.58**

TAG	Flock	Breed	Sites	Progeny	WWT BV	Rank
17/02	**Tyanee**	**Suffolk**	**P06**	**96**	**4.58**	**1**
447/03	Blackdale Stud	Texel	P06	37	4.07	2
231/97	**Bankhead**	**Southdown**	**A05**	**44**	**3.75**	**3**
25/99	Tyanee	Suffolk	Link sire	543	3.62	4
430/03	**Glengarry**	**Poll Dorset**	**A05 P05 W05**	**117**	**3.62**	**4**
241/04	Poll Dorset Breed Society	Poll Dorset	A08	33	3.43	6
33/04	**Myola**	**South Suffolk**	**P06**	**52**	**3.33**	**7**
275/04	Goldstream	Suffolk	A07	50	3.31	8
767/99	**Darenal**	**Dorset Down**	**A03**	**14**	**3.27**	**9**
4012/99	Bilberry Oaks	Hampshire	W02 W03	50	3.27	9
***128/97**	**Punchbowl**	**Suffolk**	**W03**	**37**	**3.26**	**11**
570/06	Glengarry MegaMeat	Poll Dorset	P08	83	3.10	12
1010/03	**Punchbowl**	**Suffolk**	**W07**	**34**	**2.80**	**13**
514/00	Linton	Poll Dorset	W04	46	2.47	14
130/05	**Belview**	**Dorset Down**	**A07**	**67**	**2.41**	**15**
169/02	Ohio	Poll Dorset	W06	35	2.29	16
35/01	**Glengarry**	**Poll Dorset**	**A03 W03**	**37**	**2.13**	**17**
114/03	Kepler Supreme	Composite	A05	33	2.11	18
25/02	**Glenaven**	**Hampshire**	**W04**	**39**	**2.10**	**19**
48/05	Premier Suffolk	Suffolk	W08	36	2.08	20
76/05	**NZ Suffolk**	**Suffolk**	**P08**	**101**	**2.06**	**21**
191/04	Winiata	Dorset Down	P05	92	2.06	21
11/03	**Goldstream**	**Suffolk**	**P05**	**23**	**2.03**	**23**
61/04	Twin Farm	Suffolk	W06	30	2.02	24
80/03	**Silverhope**	**Poll Dorset**	**P06**	**43**	**1.94**	**25**

Dual Purpose: **Range: -4.68 to 3.13**

TAG	Flock	Breed	Sites	Progeny	WWT BV	Rank
D110/04	**Blackdale Stud**	**Textra**	**W07**	**39**	**3.13**	**1**
742/04	Cairnlea	Coopworth	W07	27	1.82	2
50394/06	**Kelso**	**Composite**	**A08**	**21**	**1.63**	**3**
232/01	TRIGG	Romney	W03	20	1.43	4
1233/02	**SRDG**	**Romney**	**W08**	**14**	**1.40**	**5**
D611/04	Glenovis	Corriedale	A07	45	1.13	6
23253/05	**Longdowns**	**Composite**	**W08**	**21**	**0.92**	**7**
531/98	Wharetoa	Coopworth	W03	27	0.87	8
4399/06	**Landcorp**	**Romney**	**P08**	**29**	**0.81**	**9**
HG552/02	Clifton	Corriedale	A05	48	0.79	10
2247/04	**Rosedale**	**Growbulk**	**W07**	**35**	**0.52**	**11**
97/02	Raywell	Borderdale	A03 A04	48	0.44	12
833/02	**Tamlet**	**Coopworth**	**W05 W06**	**54**	**0.44**	**12**
777/05	Tamlet	Coopworth	W08	35	0.41	14
781/00	**Shoreford**	**Romney**	**W03**	**30**	**0.40**	**15**
358/04	MNCC	Coopworth	P07	43	0.31	16
542/04	**Hazeldale**	**Perendale**	**W06**	**29**	**0.29**	**17**
5093/99	Meadowslea	Romney	A03	22	0.28	18
301/04	**Hazeldale**	**Perendale**	**A08**	**21**	**0.19**	**19**
512/05	Kamahi	Perendale	W07	13	0.11	20
55/01	**Bonnieview**	**Perendale**	**W05**	**20**	**0.02**	**21**
4014/96	Waihora	Romney	W04	21	-0.11	22
1832/02	**Awareka**	**Romney**	**W04 A04**	**74**	**-0.16**	**23**
627/01	TRIGG	Romney	A06	72	-0.35	24
426/99	**Mt Guardian**	**Perendale**	**W03**	**19**	**-0.42**	**25**
5 sires	*1980s sires*	*Romney*	*W07*	*18*	*-2.97*	*69*

The average weaning weight was 29.6kg.

WORMFEC BV (%)

Terminal: **Range: -39.0% to 93.2%**

TAG	Flock	Breed	Sites	Progeny	WormFEC BV	Rank
E-140/00	**Turnberry**	**Composite**	**W02**	**20**	**-39.04**	**1**
299/00	Landcorp	Texel	W02 W03	58	-38.44	2
44/02	**WTD**	**Texel**	**P05**	**50**	**-31.10**	**3**
3/04	Egilshay	Texel	A08	68	-21.56	4
167/02	**MEBA**	**Texel**	**W04**	**51**	**-21.15**	**5**
110/03	Murray Downs	Texel	W05	37	-21.11	6
9/03	**Pahiwi**	**Suffolk**	**P05**	**103**	**-20.66**	**7**
19/03	Tasvic Downs	Southdown	P05	60	-16.80	8
49/05	**MegaMeat**	**Poll Dorset**	**P07**	**49**	**-16.29**	**9**
929/00	Craig Annat	South Suffolk	W02	30	-15.2	10
65/03	**Pahiwi**	**Suffolk**	**A06**	**53**	**-14.75**	**11**
165/00	Torresdale	Suffolk	W02	30	-13.85	12
127/05	**Douglas Downs**	**Poll Dorset**	**W07**	**31**	**-12.19**	**13**
911/99	Murray Downs	Texel	W03	31	-11.49	14
18/02	**Brandes Burton**	**Texel**	**A07**	**57**	**-11.42**	**15**
62/02	Silverstream	Dorset Down	W05	30	-11.34	16
400/00	**Brandes Burton**	**Texel**	**W02 W04**	**62**	**-9.90**	**17**
25/99	Tyanee	Suffolk	Link sire	543	-9.18	18
120/00	**Glendhu**	**Dorset Down**	**W03**	**33**	**-8.17**	**19**
78/02	Lincoln	Dorset Down	W04	30	-7.83	20
101/03	**Landover**	**Texel**	**W07**	**17**	**-7.46**	**21**
48/05	Premier Suffolk	Suffolk	W08	36	-7.06	22
34/06	**Southern Poll Dorset Group**	**Poll Dorset**	**W08**	**48**	**-6.34**	**23**
41/00	Tasvic Downs	Southdown	W02	44	-5.94	24
XA2/99	**The Burn**	**Texel**	**W02**	**22**	**-5.71**	**25**

Dual Purpose: **Range: -59.4% to 83.9%**

TAG	Flock	Breed	Sites	Progeny	WormFEC BV	Rank
386/03	**Rene**	**Perendale**	**A07**	**27**	**-59.40**	**1**
649/01	Glenbrook	Romney	P06	33	-48.87	2
722/03	**Rose Mains**	**Perendale**	**W05**	**36**	**-46.35**	**3**
4014/96	Waihora	Romney	W04	21	-42.73	4
348/06	**Highfield**	**Romney**	**A08**	**45**	**-40.60**	**5**
5 sires	*1980s sires*	*Romney*	*W07*	*18*	*-40.22*	*6*
4203/02	**Kelso**	**Composite**	**P06**	**39**	**-37.13**	**7**
JL1695/1	WRIG	Romney	P05	36	-35.51	8
1035/02	**Newhaven**	**Perendale**	**W04**	**31**	**-33.69**	**9**
850/00	Hillcrest	Perendale	W03	28	-30.9	10
D110/04	**Blackdale Stud**	**Textra**	**W07**	**39**	**-29.20**	**11**
300/03	MNCC	Coopworth	W05	27	-29.16	12
417/04	**ARDG**	**Romney**	**P08**	**34**	**-29.13**	**13**
706/00	Lincoln	Coopworth	Link sire	429	-27.76	14
34/02	**Wai-Iti Romneys**	**Romney**	**P06**	**25**	**-27.75**	**15**
574/06	Kylemore	Perendale	A08	20	-27.01	16
147/01	**Tresco**	**Romney**	**W05**	**28**	**-26.34**	**17**
132/01	Kelso	Composite	W03	31	-26.08	18
1617/04	**Awareka**	**Romney**	**W07**	**22**	**-24.54**	**19**
5093/99	Meadowslea	Romney	A03	22	-24.23	20
1235/00	**Strathblane**	**Corriedale**	**A04**	**30**	**-19.10**	**21**
407/03	Hiwinui	Romney	P05	32	-16.39	22
2135/99	**Rosedale**	**Growbulk**	**W03**	**29**	**-13.83**	**23**
401/05	Hazeldale	Perendale	W08	38	-12.79	24
214/05	**TRIGG**	**Romney**	**W08**	**31**	**-11.39**	**25**

WormFEC breeding values are expressed as a percentage reduction in eggs shed.

EYE MUSCLE AREA BV (cm^2)

Terminal: **Range: -1.06 to 3.58**

TAG	Flock	Breed	Sites	Progeny	EMA BV	Rank
299/00	**Landcorp**	**Texel**	**W02 W03**	**58**	**3.58**	**1**
299/01	Ohio	Poll Dorset	A04	34	3.14	2
114/03	**Kepler Supreme**	**Composite**	**A05**	**33**	**3.01**	**3**
2002/02	Mount Linton	Texel Cross	A04	34	2.66	4
34/06	**Southern Poll Dorset Group**	**Poll Dorset**	**W08**	**48**	**2.54**	**5**
570/06	Glengarry MegaMeat	Poll Dorset	P08	83	2.42	6
530/05	**Grasmere**	**Texel**	**P08**	**38**	**2.37**	**7**
91892/05	Kelso	Kelso Ranger	P08	52	2.34	8
106/99	**Ohio**	**Poll Dorset**	**W02**	**45**	**2.31**	**9**
127/05	Douglas Downs	Poll Dorset	W07	31	2.17	10
021/01	**Broken Hut**	**Texel**	**A03**	**29**	**2.04**	**11**
3/04	Egilshay	Texel	A08	68	1.97	12
65/03	**Pahiwi**	**Suffolk**	**A06**	**53**	**1.95**	**13**
33/02	RBL Rissington	Primera	W04	27	1.94	14
T210/04	**Wharetoa**	**Meatmaker**	**W06**	**34**	**1.90**	**15**
89/05	South Suffolk Breed Society	South Suffolk	A08	28	1.80	16
458/02	**Waikite**	**Texel**	**A06**	**41**	**1.80**	**16**
430/03	Glengarry	Poll Dorset	A05 P05 W05	117	1.76	18
18/02	**Brandes Burton**	**Texel**	**A07**	**57**	**1.65**	**19**
19/03	Tasvic Downs	Southdown	P05	60	1.57	20
275/04	**Goldstream**	**Suffolk**	**A07**	**50**	**1.56**	**21**
T533/01	Wharetoa	Composite	W02 W03	51	1.50	22
110/03	**Murray Downs**	**Texel**	**W05**	**37**	**1.49**	**23**
80/03	Silverhope	Poll Dorset	P06	43	1.43	24
D244/05	**Hawea Farm**	**Poll Dorset/Texel**	**P07**	**82**	**1.39**	**25**

Dual Purpose: **Range: -2.82 to 2.13**

TAG	Flock	Breed	Sites	Progeny	EMA BV	Rank
1560/03	**The Gree**	**Greeline**	**W06**	**24**	**2.13**	**1**
23253/05	Longdowns	Composite	W08	21	1.93	2
D110/04	**Blackdale Stud**	**Textra**	**W07**	**39**	**1.92**	**3**
138/01	Edale	Growbulk	A03	34	0.95	4
542/04	**Hazeldale**	**Perendale**	**W06**	**29**	**0.71**	**5**
5203/04	Marlow	Coopworth	W08	14	0.65	6
2247/04	**Rosedale**	**Growbulk**	**W07**	**35**	**0.64**	**7**
722/03	Rose Mains	Perendale	W05	36	0.60	8
55/01	**Bonnieview**	**Perendale**	**W05**	**20**	**0.42**	**9**
426/99	Mt Guardian	Perendale	W03	19	0.34	10
85/00	**Tahakita**	**Coopworth**	**W04 A04**	**75**	**0.31**	**11**
401/05	Hazeldale	Perendale	W08	38	0.31	12
JL1695/1	**WRIG**	**Romney**	**P05**	**36**	**0.17**	**13**
11/01	Little River	Cheviot	A03 W03	60	0.16	14
300/03	**MNCC**	**Coopworth**	**W05**	**27**	**0.08**	**15**
4203/02	Kelso	Composite	P06	39	0.08	16
214/05	**TRIGG**	**Romney**	**W08**	**31**	**-0.19**	**17**
833/02	Tamlet	Coopworth	W05 W06	54	-0.23	18
850/00	**Hillcrest**	**Perendale**	**W03**	**28**	**-0.25**	**19**
5 sires	*1980s sires*	*Romney*	*W07*	*18*	*-0.27*	*20*
4014/96	**Waihora**	**Romney**	**W04**	**21**	**-0.34**	**21**
1002/03	Mt Guardian	Perendale	W06	26	-0.35	22
1233/02	**SRDG**	**Romney**	**W08**	**14**	**-0.36**	**23**
781/00	Shoreford	Romney	W03	30	-0.41	24
742/04	**Cairnlea**	**Coopworth**	**W07**	**27**	**-0.45**	**25**

The average eye muscle area was 11.5cm^2.

NUMBER OF LAMBS BORN BV

Dual Purpose: **Range: -0.277 to 0.325**

TAG	Flock	Breed	Sites	Progeny	NLB BV	Rank
1617/04	**Awareka**	**Romney**	**W07**	**73**	**0.325**	**1**
147/01	Tresco	Romney	W05	200	0.304	2
742/04	**Cairnlea**	**Coopworth**	**W07**	**97**	**0.292**	**3**
313/01	Valley	Coopworth	W04	79	0.253	4
300/03	**MNCC**	**Coopworth**	**W05**	**192**	**0.229**	**5**
512/05	Kamahi	Perendale	W07	30	0.222	6
4014/96	**Waihora**	**Romney**	**W04**	**383**	**0.216**	**7**
1560/03	The Gree	Greeline	W06	96	0.208	8
1035/02	**Newhaven**	**Perendale**	**W04**	**143**	**0.204**	**9**
84/04	ARDG Elite	Romney	P07	24	0.202	10
706/00	**Lincoln**	**Coopworth**	**Link sire**	**200**	**0.136**	**11**
431/04	Twin Farm	TEFRom	W07	65	0.135	12
278/03	**MNCC**	**Coopworth**	**W06**	**53**	**0.124**	**13**
722/03	Rose Mains	Perendale	W05	89	0.124	13
627/01	**TRIGG**	**Romney**	**A06**	**144**	**0.123**	**15**
457/00	Nithdale	Romney	W06	222	0.121	16
2247/04	**Rosedale**	**Growbulk**	**W07**	**34**	**0.119**	**17**
4203/02	Kelso	Composite	P06	68	0.1	18
34/01	**Twin Farm**	**TEFRom**	**W03 W06**	**94**	**0.096**	**19**
358/04	MNCC	Coopworth	P07	40	0.09	20

Results are presented for rams with at least 20 daughters with two-tooth lambing records. Only 40 sires qualify to date as daughters were only retained in the CPT from 2004 onwards.

FLEECE WEIGHT BV

Dual Purpose: **Range: -0.81 to 0.90**

TAG	Flock	Breed	Sites	Progeny	FW12 BV	Rank
742/04	**Cairnlea**	**Coopworth**	**W07**	**27**	**0.90**	**1**
1832/02	Awareka	Romney	W04 A04	74	0.61	2
313/01	**Valley**	**Coopworth**	**W04**	**34**	**0.52**	**3**
531/98	Wharetoa	Coopworth	W03	27	0.46	4
278/03	**MNCC**	**Coopworth**	**W06**	**30**	**0.36**	**5**
1617/04	Awareka	Romney	W07	22	0.31	6
781/00	**Shoreford**	**Romney**	**W03**	**30**	**0.30**	**7**
358/04	MNCC	Coopworth	P07	43	0.29	8
5828/02	**Waihora**	**Romney**	**W04**	**50**	**0.26**	**9**
706/00	Lincoln	Coopworth	Link sire	429	0.25	10
211/99	**Blackdale Stud**	**Coopworth**	**W03**	**29**	**0.23**	**11**
218/02	Waiohine	Romney	P07	43	0.21	12
18/04	**White Rock**	**Corriedale**	**A06**	**71**	**0.11**	**13**
422/00	Wattlebank	Corriedale	A04 A05	77	0.09	14
833/02	**Tamlet**	**Coopworth**	**W05 W06**	**54**	**0.09**	**14**
232/01	TRIGG	Romney	W03	20	0.09	14
HG552/02	**Clifton**	**Corriedale**	**A05**	**48**	**0.06**	**17**
1235/00	Strathblane	Corriedale	A04	30	0.05	18
172/02	**Glenrannoch**	**Perendale**	**A04**	**35**	**0.04**	**19**
457/00	Nithdale	Romney	W06	22	0.02	20
426/99	**Mt Guardian**	**Perendale**	**W03**	**19**	**0.01**	**21**
85/00	Tahakita	Coopworth	W04 A04	75	0.00	22
5093/99	**Meadowslea**	**Romney**	**A03**	**22**	**-0.01**	**23**
493/00	Hazeldale	Perendale	W03	22	-0.02	24
300/03	**MNCC**	**Coopworth**	**W05**	**27**	**-0.03**	**25**
5 sires	1980s sires	Romney	W07	18	-0.52	54

Breeding values for fleece weight at 12 months of age. The average fleece weight was 3.31kg.

FACIAL ECZEMA BV

Dual Purpose: **Range: -0.65 to 0.65**

TAG	Flock	Breed	Sites	Progeny	GGT21 BV	Rank
4399/06	**Landcorp**	**Romney**	**P08**	**5**	**-0.65**	**1**
649/01	Glenbrook	Romney	P06	5	-0.51	2
214/05	**TRIGG**	**Romney**	**W08**	**5**	**-0.42**	**3**
278/03	MNCC	Coopworth	W06	5	-0.32	4
706/00	**Lincoln**	**Coopworth**	**Link sire**	**55**	**-0.31**	**5**
386/03	Rene	Perendale	A07	5	-0.27	6
348/06	**Highfield**	**Romney**	**A08**	**5**	**-0.25**	**7**
5203/04	Marlow	Coopworth	W08	5	-0.25	7
722/03	**Rose Mains**	**Perendale**	**W05**	**5**	**-0.25**	**7**
542/04	Hazeldale	Perendale	W06	5	-0.25	7
55/01	**Bonnieview**	**Perendale**	**W05**	**5**	**-0.23**	**11**
417/04	ARDG	Romney	P08	5	-0.22	12
18/04	**White Rock**	**Corriedale**	**A06**	**5**	**-0.18**	**13**
HG552/02	Clifton	Corriedale	A05	5	-0.17	14
D110/04	**Blackdale Stud**	**Textra**	**W07**	**5**	**-0.17**	**14**
218/02	Waiohine	Romney	P07	5	-0.12	16
D611/04	**Glenovis**	**Corriedale**	**A07**	**5**	**-0.12**	**16**
1002/03	Mt Guardian	Perendale	W06	5	-0.11	18
4203/02	**Kelso**	**Composite**	**P06**	**5**	**-0.1**	**19**
358/04	MNCC	Coopworth	P07	5	-0.08	20
34/01	**Twin Farm**	**TEFRom**	**W03 W06**	**5**	**-0.08**	**20**
1617/04	Awareka	Romney	W07	5	-0.07	22
457/00	**Nithdale**	**Romney**	**W06**	**5**	**-0.04**	**23**
5 sires	1980s sires	Romney	W07	5	0	27

Breeding values are expressed as the amount of the liver enzyme GGT (Gamma glutamyl transferase) present 21 days after challenging progeny with sporidesmin. GGT is an indication of the amount of liver damage, so low (more negative) breeding values indicate resistance to facial eczema.

Facial eczema measurements have only been collected from dual purpose sires for four years, so 46 rams have been evaluated to date.

TOP 20 TERMINAL RAMS FOR MEAT AND GROWTH

ID	Flock	Breed	Progeny	Meat & growth index* ($)	Meat Value Index ($)	Growth Index ($)	WWT BV (kg)	Worm FEC BV (%)	EMA BV (cm^2)	Dress % BV (%)	Fat Colour BV (b*)	Meat colour BV (a*)	pH BV
530/05	**Grasmere**	**Texel**	**38**	**7.73**	**5.57**	**2.17**	**1.7**	**0.1**	**2.37**	**0.02**	**-0.11**	**0.47**	**-0.01**
275/04	Goldstream	Suffolk	50	5.22	2.73	2.49	3.3	93.2	1.56	-0.02	0.53	-0.11	0.01
570/06	**Glengarry MegaMeat**	**Poll Dorset**	**83**	**4.96**	**1.85**	**3.11**	**3.1**	**31.1**	**2.42**	**0.01**	**-0.71**	**-1.28**	**-0.01**
299/01	Ohio	Poll Dorset	34	4.78	2.25	2.52	1.7	73.2	3.14	0.00	-1.60	-0.18	0.00
241/04	**Poll Dorset Breed Society**	**Poll Dorset**	**33**	**4.65**	**0.76**	**3.89**	**3.4**	**42.3**	**0.96**	**0.00**	**-0.03**	**-0.51**	**-0.03**
299/00	Landcorp	Texel	58	4.37	3.50	0.87	-0.4	-38.4	3.58	0.02	-0.83	-0.32	0.01
25/99	**Tyanee**	**Suffolk**	**543**	**4.29**	**1.37**	**2.91**	**3.6**	**-9.2**	**0.39**	**-0.01**	**2.11**	**-0.81**	**0.02**
447/03	Blackdale Stud	Texel	37	4.23	0.91	3.32	4.1	-1.9	1.28	0.00	-3.88	-0.15	0.00
430/03	**Glengarry**	**Poll Dorset**	**117**	**3.83**	**0.65**	**3.18**	**3.6**	**31.4**	**1.76**	**0.00**	**-1.79**	**-0.71**	**-0.02**
101/03	Landover	Texel	17	3.75	2.37	1.38	0.3	-7.5	0.94	0.01	0.00	-0.83	0.00
44/02	**WTD**	**Texel**	**50**	**3.61**	**2.06**	**1.55**	**1.6**	**-31.1**	**-0.38**	**0.00**	**-1.23**	**-0.75**	**0.03**
911/99	Murray Downs	Texel	31	3.54	2.06	1.47	0.7	-11.5	1.04	0.01	-0.50	-0.66	0.02
48/05	**Premier Suffolk**	**Suffolk**	**36**	**3.49**	**1.61**	**1.88**	**2.1**	**-7.1**	**0.05**	**0.00**	**-0.29**	**-0.39**	**0.00**
114/03	Kepler Supreme	Composite	33	3.42	2.32	1.10	2.1	14.5	3.01	0.00	2.80	-0.64	0.02
***128/97**	**Punchbowl**	**Suffolk**	**37**	**3.42**	**1.12**	**2.30**	**3.3**	**6.8**	**1.34**	**-0.01**	**-1.47**	**-1.39**	**0.07**
110/03	Murray Downs	Texel	37	3.29	2.74	0.55	-0.3	-21.1	1.49	0.02	-0.83	-0.99	0.02
400/00	**Brandes Burton**	**Texel**	**62**	**3.22**	**1.87**	**1.35**	**1.0**	**-9.9**	**1.29**	**0.02**	**-0.59**	**0.09**	**0.03**
1296/03	Mount Linton	Texel Cross	41	3.13	1.91	1.21	1.2	34.7	0.37	0.00	-1.66	-0.94	0.03
122/05	**Blackdale Stud**	**Texel**	**63**	**2.96**	**1.76**	**1.20**	**0.8**	**1.9**	**-0.37**	**0.01**	**0.17**	**-0.51**	**0.03**
231/97	Bankhead	Southdown	44	2.90	0.30	2.60	3.8	13.7	-0.10	0.00	-0.31	0.45	0.02

** The combined Growth and Meat Value indexes, calculated by adding together the two individual indexes.*

TOP 20 DUAL PURPOSE RAMS FOR MEAT AND GROWTH

ID	Flock	Breed	Progeny	Meat & growth Index* ($)	Meat Value Index ($)	Growth Index ($)	WWT BV (kg)	Worm FEC BV (%)	EMA BV (cm^2)	Dress % BV (%)	Fat Colour BV (b*)	Meat colour BV (a*)	pH BV	NLB BV	FW12 BV (kg)	FE BV
D110/04	**Blackdale Stud**	**Textra**	**39**	**5.71**	**3.10**	**2.61**	**3.13**	**-29.2**	**1.92**	**0.01**	**-1.30**	**-0.42**	**0.04**	**-0.144**	**-0.75**	**-0.17**
50394/06	Kelso	Composite	21	3.11	1.33	1.78	1.63	3.3	-0.74	0.01	-0.01	-0.20	0.08			-0.02
23253/05	**Longdowns**	**Composite**	**21**	**1.66**	**0.88**	**0.79**	**0.92**	**1.4**	**1.93**	**0.00**	**0.38**	**-0.65**	**-0.02**			**0.07**
542/04	Hazeldale	Perendale	29	0.78	0.72	0.05	0.29	-7.1	0.71	0.00	1.25	0.25	-0.02	-0.033	-0.51	-0.25
358/04	**MNCC**	**Coopworth**	**43**	**0.52**	**0.42**	**0.11**	**0.31**	**35.2**	**-1.21**	**-0.01**	**0.76**	**1.51**	**-0.05**	**0.090**	**0.29**	**-0.08**
4203/02	Kelso	Composite	39	0.46	1.90	-1.44	-1.72	-37.1	0.08	0.00	0.49	0.30	0.01	0.100	-0.37	-0.10
301/04	**Hazeldale**	**Perendale**	**21**	**0.38**	**0.16**	**0.22**	**0.19**	**-4.2**	**-1.48**	**-0.01**	**0.09**	**-0.18**	**-0.03**			**0.00**
386/03	Rene	Perendale	27	0.14	1.23	-1.10	-1.04	-59.4	-1.80	-0.01	0.49	0.50	0.01		-0.26	-0.27
132/01	**Kelso**	**Composite**	**31**	**-0.05**	**0.42**	**-0.47**	**-1.36**	**-26.1**	**-0.62**	**0.02**	**-0.10**	**-0.58**	**0.00**		**-0.12**	
55/01	Bonnieview	Perendale	20	-0.05	0.15	-0.20	0.02	29.8	0.42	-0.01	-1.27	-0.73	0.03	-0.016	-0.07	-0.23
431/04	**Twin Farm**	**TEFRom**	**22**	**-0.20**	**0.64**	**-0.84**	**-1.26**	**-10.0**	**-1.30**	**0.00**	**0.31**	**0.20**	**0.01**	**0.135**	**-0.22**	**0.15**
88/02	TRIGG	Romney	25	-0.29	1.04	-1.33	-1.51	0.7	-1.77	-0.01	-0.93	1.34	-0.08	-0.080	-0.07	0.00
627/01	**TRIGG**	**Romney**	**72**	**-0.33**	**0.27**	**-0.60**	**-0.35**	**15.3**	**-2.06**	**0.00**	**1.47**	**0.26**	**0.02**	**0.123**	**-0.08**	**0.11**
2247/04	Rosedale	Growbulk	35	-0.39	-0.23	-0.16	0.52	-8.0	0.64	-0.01	0.49	0.21	-0.04	0.119	-0.23	0.01
232/01	**TRIGG**	**Romney**	**20**	**-0.40**	**-0.80**	**0.40**	**1.43**	**9.5**	**-1.63**	**-0.01**	**-0.30**	**0.33**	**-0.02**		**0.09**	
781/00	Shoreford	Romney	30	-0.43	0.30	-0.73	0.40	16.0	-0.41	-0.02	-0.14	0.97	-0.01		0.30	
97/02	**Raywell**	**Borderdale**	**48**	**-0.46**	**-0.23**	**-0.23**	**0.44**	**4.7**	**-1.24**	**-0.01**	**0.29**	**0.45**	**0.01**	**-0.106**	**-0.11**	
138/01	Edale	Growbulk	34	-0.51	0.24	-0.75	-1.04	44.3	0.95	0.00	-0.91	-1.09	-0.01		-0.12	
172/02	**Glenrannoch**	**Perendale**	**35**	**-0.54**	**-0.17**	**-0.37**	**-1.12**	**5.0**	**-0.97**	**0.00**	**-0.79**	**0.21**	**0.02**	**-0.069**	**0.04**	
574/06	Kylemore	Perendale	20	-0.63	0.12	-0.75	-0.58	-27.0	-0.78	0.01	0.63	0.54	0.00			-0.03

** The combined Growth and Meat Value indexes, calculated by adding together the two individual indexes.*

LINK SIRES ACROSS SITES AND YEARS

Terminal sire

			Years and sites used										
ID	**Flock**	**Breed**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
381/98	**Poukawa**	**Composite**		**P**		**P**							
T533/01	Wharetoa	Composite					W	W					
31/02	**Kaya Dorper**	**Dorper**								**A**		**P**	
767/99	Darenal	Dorset Down						A, P					
77/95	**Douglas Downs**	**Dorset Horn**					**W**		**W**				
4012/99	Bilberry Oaks	Hampshire					W	W					
263/95	**Aorere**	**Poll Dorset**	**P**	**P**	**P**	**P**	**P**	**P**					
35/01	Glengarry	Poll Dorset						A, P, W					
430/03	**Glengarry**	**Poll Dorset**								**A, P, W**			
211/98	Kurralea	Poll Dorset			P		W						
106/99	**Ohio**	**Poll Dorset**				**P**	**W**						
299/01	Ohio	Poll Dorset						P	A, P				
U33/97	**Mornish**	**Suffolk**					**P, W**						
*128/97	Punchbowl	Suffolk					P	W					
***326/94**	**Punchbowl**	**Suffolk**			**P**			**P**					
*419/96	Punchbowl	Suffolk				P	W						
165/00	**Torresdale**	**Suffolk**					**P, W**						
25/99	Tyanee	Suffolk				P	P	P	A, P	P	A, P, W	A, P, W	A, P, W
400/00	**Brandes Burton**	**Texel**					**W**		**W**				
299/00	Landcorp	Texel					W	W					

Dual Purpose

			Years and sites used										
ID	**Flock**	**Breed**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**
97/02	**Raywell**	**Borderdale**						**A**	**A**				
11/01	Little River	Cheviot						A, W					
706/00	**Lincoln**	**Coopworth**						**A, W**	**A**	**A, W**	**A, P, W**	**A, P, W**	**A, P, W**
85/00	Tahakita	Coopworth							A, W				
833/02	**Tamlet**	**Coopworth**								**W**	**W**		
422/00	Wattlebank	Corriedale							A	A			
B40/94	**Silverstream**	**East Friesian**		**P**	**P**								
664/98	ARDG Elite	Romney						W	P				
1832/02	**Awareka**	**Romney**							**A, W**				
2165/97	Wairere	Romney					W	W	A				
34/01	**Twin Farm**	**TEFRom**						**W**			**W**		

BREEDING FOR 'BREECH BARENESS'

Each year the central progeny test presents growth, meat yield and ewe trait breeding values. These traits are considered to be important, as they are major drivers of on-farm profitability. There are however, a range of other traits measured, which are not necessarily important for on-farm profitability, but are considered important for animal health and welfare, and labour saving reasons. One such trait is 'breech bareness'.

Breech bareness is defined as the area of naturally bare skin around the perineum (the general region between the anus and the genital organs). Breech bareness has the potential to reduce the need to crutch animals, and to reduce dags and associated fly strike. These differences mean that lambs are better presented for slaughter in the meat processing plant, where there is less washing of animals in the stock yards, less contamination on the processing chain, less livestock going on the detain rail, and so a superior product is delivered to overseas markets.

AgResearch has developed a scoring system so that breech bareness can be quantified. Breech bareness has been measured in 21 flocks in a M&WNZ funded study to estimate the heritability of breech bareness and its correlations with other traits. Breech bareness has been recorded in the Central Progeny Test providing the opportunity to look at the genetics of breech bareness in this genetically diverse population. The scoring system is illustrated in the figure below. Breech bareness is scored on a scale of 1 to 5. A score of 1 is assigned to animals that have wool growing right to the edges of the anus, and a score of 5 where there is a large bare area around and below the anus.

Breech bareness score in lambs (Image courtesy of AgResearch)

Breech bareness varies between animals, and there are considerably more animals with low scores than with high scores. The average breech bareness score was 2.11 ± 0.80 in the AgResearch study and 1.33 ± 0.50 in the Central Progeny Test. While the average score of breech bareness was different between the two programmes, the variability was similar (the coefficients of variation, a measure of variability, was 37% for both programmes). The heritability for breech bareness was estimated to be 0.36, which is considered moderate.

Using these figures, it is possible to predict the genetic improvement in breech bareness per year under a system where we select for bareness alone. In order to estimate the gains made per year, we need to make some assumptions about the flock it is recorded in. The following assumptions were made:

- 300 recorded ewes
- rams are used for a single year as two tooths
- ewes were lambed for four years with the first lambing as a two tooth
- 2% of ram lambs are retained as stud sires within the flock
- 50% of ewe lambs are retained as replacements for the flock
- The average breech bareness in the flock was a bareness score of 2.0

The predicted response in such a flock is an increase of 0.13 bareness score units per year, or to put it another way, it would take 7.7 years of selection to increase the bareness score

by one unit. This will not be achieved in practice because no one is likely to practice single trait selection for breech bareness. It is more likely that “bareness” will be one of a number of traits under selection. To estimate gains in bareness in this situation, we need to know the genetic correlations with other traits under selection.

At this time, genetic correlations have only been estimated between breech bareness and a small number of performance traits in the AgResearch study, including dag score, weaning weight and fleece weight at 12 months of age. Significant genetic correlations were found between bareness and dag score (-0.31) and weaning weight (0.51). This means that selecting for an increase in breech bareness would result in a decrease in dag score and an increase in weaning weight. Both of these results are encouraging as it means that including breech bareness in a breeding programme is not likely to compromise the genetic progress being made for weaning weight or against dags. Interestingly, there was no significant genetic relationship found between breech bareness and fleece weight. Selection for breech bareness should therefore have no noticeable effect on wool production.

Central Progeny Test results for breech bareness are preliminary and more data needs to be collected. Correlations with other production traits, and the extent to which the observed differences suggest breed effects all need to be examined.

These initial results indicate that breech bareness could be part of a breeding programme without having a major deleterious impact on other production traits. Benefits due to reduced incidence of dags would be seen early on. In the longer term, more benefits would come from a reduced need for crutching, which in turn would make it easier to prepare lambs for slaughter.

GENETIC RELATIONSHIPS BETWEEN GROWTH, MEAT YIELD AND MEAT QUALITY

Animal performance for growth and meat yields are important to farmers and meat processors, while market signals indicate meat quality traits are becoming increasingly important to consumers. Growth and meat yield traits have included live weights measured at various ages and ultrasonic and CT scanning to estimate the meat and fat yield. However, VIAscan® has introduced potential new measurements for genetic improvement of meat yield.

Meat quality of lamb meat is made up of a number of traits, including meat and fat colour, pH, tenderness and factors affecting the eating experience such as taste, juiciness and smell. Meat colour and pH are specific meat quality traits which have been repeatedly found to be important to consumers. Consumers prefer to buy bright red meat, as this colour denotes freshness. Meat pH is important as it affects meat colour, shelf life and tenderness.

In other industries, such as pork and poultry, genetic selection for extreme growth rates and meat yields has been found to have a negative impact on meat quality. While in the New Zealand sheep industry, the reproduction rates and the predominant use of dual purpose sheep means that genetic selection for growth and meat yield is not as intensive as in the pork and poultry industries. Terminal sire sheep breeding programmes have a stronger selection emphasis for fast growth and high meat yield. To ensure that selection decisions are not having a negative impact on meat quality traits, analyses have been undertaken to understand the relationship between growth, meat yield and meat quality traits.

Genetic relationships between growth, yield and meat quality traits have been analysed in two projects this year using data from the Central Progeny Test. In the first project the genetic relationships between growth traits and VIAscan® meat yields were analysed. The VIAscan traits were defined as weight of lean meat in the hindleg, loin and shoulder primal cuts, and were analysed on an age-constant basis (i.e. as if all animals were analysed at exactly the same age). Not surprisingly, genetic correlations between the growth traits and VIAscan® traits were extremely high (all genetic correlations were >0.91). In particular the genetic correlations between the three VIAscan® traits were all greater than 0.94. This indicates that increasing the weight of muscle in one cut increases the weight of muscle in all three cuts. However, meat yield is generally considered on a carcass weight adjusted basis to determine whether an animal has more or less meat than would be expected at a given carcass weight. When the results were expressed on a carcass weight adjusted basis, the genetic correlations fell to range between 0.62 and 0.85. This indicates that while there is a positive relationship in meat yield across all three carcass regions, there is some variation between animals in where they deposit meat within the carcass, and that it is feasible to redistribute meat across the carcass through genetic selection, albeit rather slowly.

In the second project, the relationship between the meat yield and growth traits, and meat quality traits such as pH, fat and meat colour were studied. The relationships found between meat quality and selection for growth rate and meat yield included the following,

- There was a low but significant relationship between growth rate and meat lightness, such that meat will tend to become lighter (paler) if you select for increased growth rate. No relationship was found between growth traits and meat redness.
- There should be no significant change in meat colour (lightness or redness) if you select for increased meat yield
- Fat should become less yellow if you select for increased meat yield

While combining the growth rate and meat yield traits in a selection index was statistically associated with an increase in meat lightness, the change was small. It would take around 12 years of selection on a ‘typical’ stud farm to change the lightness by one unit.

The results of the two studies can be found in full in the 2009 Proceedings of the New Zealand Society of Animal Production (NZSAP), or on the NZSAP website (www.nzsap.org.nz/sap6.html).

ANIMAL MANAGEMENT PROCEDURES

To date, a total of 169 sires from 15 terminal and 11 dual purpose breeds have been evaluated in the M&WNZ Central Progeny Test (formerly the Alliance CPT®). There are some differences in animal management across the three sites that reflect differences in geographical location and average performance of the ewe flock at each site. However, wherever possible animal management procedures are the same across sites. Following is a brief summary of management procedures applied across sites.

Mating
The aim across the three Central Progeny Test sites is to have at least 20 progeny per sire for the evaluation of a sire's meat and growth performance for both terminal and dual purpose sires, and 25 ewe progeny retained for maternal evaluations of the dual purpose sires. Numbers of ewes allocated varies between sites due to differences in fertility in the ewe flocks. All ewes are synchronised for mating using CIDRs, whether mated naturally or by AI.

Lambing
Flocks are split into single-bearing and multiple-bearing mobs prior to lambing. Lambs are tagged and weighed within 12 hours of birth. Sex, birth rank and rearing rank are recorded at the same time. At some sites, the smallest triplet is mothered onto a single bearing ewe.

Docking
Lambs are vaccinated for diseases and conditions that are relevant to each site. Live weights are collected at docking. Lambing mobs are usually joined together at docking and the grazing mob is recorded.

Weaning
Weaning occurs at 12 weeks of age. Live weight is recorded at weaning and a faecal sample collected to measure faecal egg count. Lambs are also dag scored at this time. Lambs which remain after weaning (the first draft for slaughter occurs at weaning) are drenched with an oral anthelmintic.

Drafting for meat and growth performance assessment
All lambs from the terminal sires are drafted for slaughter once they reach the target live weight to achieve a carcass weight of 18kg. All ram lamb progeny, plus surplus ewe lamb progeny from the dual purpose sires, are slaughtered. The first draft occurs at weaning, followed by drafts at monthly intervals thereafter. All remaining slaughter lambs are drafted at the March slaughter. Measurements collected at slaughter include the VIAscan® measurements of lean weight in the hindleg, loin and shoulder, dressing percentage, eye muscle area, meat and fat colour and meat pH.

Ewe maternal performance assessment for dual purpose sires
Some ewe lambs from dual purpose sires are retained for evaluation of maternal traits. Date of first oestrus is recorded in hoggets and they are mated as two-tooths and four-tooths. Number of lambs born and lamb survival are recorded at each lambing. No further data are recorded on the ewes after the four-tooth lambing results are collected.

Timetable of events for key dates at the three Central Progeny Test sites for 2008/2009

Event	Poukawa	Ashley Dene	Woodlands
Start of mating	3 March	5 April	15 April
Start of lambing	28 July	1 September	10 September
Docking	At birth	18 September	29 September
Weaning	4 November	3 December	8 December
First draft	11 November	4 December	10 December
Second draft	9 December	20 January	14 January
Third draft	26 January	24 February	11 February
Fourth draft	9 March		11 March

FUTURE OF THE CENTRAL PROGENY TEST

The eighth cycle of matings (2009) has been completed at Ashley Dene, Poukawa and Woodlands. A total of 12 new terminal sire rams and 13 new dual purpose rams have been mated this year to bring to 194 the total rams to be reported on in 2010.

The fourth year-group of ewe progeny (i.e. 2007 born) have now been mated as two-tooths (2009). The number of dual purpose rams with lambing results will increase as larger numbers of ewe progeny reach reproductive age. Likewise, numbers of rams with facial eczema breeding values are increasing rapidly.

Sire entry into the Central Progeny Test

A call is made for expressions of interest to supply rams to the Central Progeny Test in November each year. All SIL recorded flocks in New Zealand receive notification of the call. The individual ram selection decision is left to the breeder, but spaces in the Central Progeny Test are allocated on the basis of:

- widespread use of the ram across SIL flocks with existing across flock information available
- providing stronger connections across groups of flocks to enhance validity of across-flock analyses based on Central Progeny Test flock data
- performance information (e.g. ultrasonic eye muscle measurements) for the individual ram in SIL recorded flocks

Alternatively, rams can be entered into the Central Progeny Test on a cost-recovery basis.

Additional traits

Currently dag score and breech/belly bareness are recorded and will be included in future reports when enough information is available to produce reliable results. The Management Committee is willing to consider adding further traits that are of sufficient value to the sheep industry to justify the cost of their inclusion.

Add-on projects

To date the unique genetic resources of the Central Progeny Test have been used for 13 add-on projects. Many of them assist with identification and evaluation of gene markers and whole genome scans. It is envisaged that such uses will continue to be an important contribution of the Central Progeny Test to advances in the sheep industry.

Genetic connectiveness between breeding groups

Permission has been granted for two breeding groups to use Central Progeny Test data to improve genetic connections between flocks in their groups. This use is positively supported by the Management Committee.

For further information, or if you want results presented to a farmer meeting, contact Andy Bray *andy.bray@meatandwoolnz.com* *Phone (04) 474 0693*

MEAT & WOOL
NEW ZEALAND

www.meatandwoolnz.com