



CENTRAL PROGENY TEST RESULTS

2012-2013



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KEY:

Sites:	A = Ashley Dene W = Woodlands P = Poukawa	Years:	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 09 = 2009/2010 season 10 = 2010/2011 season 11 = 2011/2012 season 12 = 2012/2013 season
eBV	Estimated breeding value	GGT21	Facial Eczema tolerance	
EMA	Eye Muscle Area	NLB	Number of lambs born	
FEC or WormFEC	Faecal Egg Count	FW12	Fleece weight at 12 months of age	
DAGS	Dag score	Hog Oestrus	Age at first oestrus	

The results presented in this booklet comprise the top terminal and 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®.

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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 when some rams are used across flocks (often called reference or link sires) to create genetic connections between flocks. However, there are other 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 demonstrating or trialling the use of novel or expensive measurement methods.

Objectives

The Beef + Lamb 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 sheep 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 top genetics regardless of breed. Breed comparisons require testing many randomly selected rams per breed, with few progeny per ram. The Central Progeny Test has evaluated a relatively 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/SIL-ACE/ACE-reports.aspx) evaluations. Central Progeny Test data have provided critical genetic connections needed for this.

History of the Central Progeny Test

In 2002, the "Alliance Central Progeny Test[®]" 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 the programme was extended 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 the then Meat & Wool New Zealand.

In 2005, a third site was established at Poukawa (Hawkes Bay) with On-Farm Research and historic liveweight data from the Poukawa Elite Lamb programme (1998 to 2004) being added to the analysis.

From 2005, matings and measurements have been carried out using the same protocols at all three sites. Beef + Lamb New Zealand has been the primary investor in the Central Progeny Test since 2005 and so it is now known as the B+LNZ Central Progeny Test. Results in the following tables are based on analysis of data from all rams evaluated to date. However, our

'aging policy' means that results are not presented for rams that are older than ten years of age **and** that have no progeny born in SIL-recorded flocks in the last four years, regardless of their ranking. This means that rams listed are currently, or were recently, available for use. Results are presented as two indexes (Central Progeny Test Growth Index and Central Progeny Test Meat Value Index) and individual breeding values (eBVs) for traits of interest. Three summary tables are presented at the back of the booklet, listing all relevant eBVs for the top 20 terminal rams based on the combined growth and meat indexes, the top 20 dual purpose rams based on the combined growth and meat indexes, and the top 20 dual purpose rams based on a SIL Dual Purpose Production index including merit for other traits as well.

Changes to the presentation of results for 2012/2013 born progeny

Two new breeding value tables have been added this year, dag score eBV for both terminal sire and dual purpose rams, and hogget oestrus eBV (i.e. date of first oestrus) for dual purpose rams. The dag score breeding value presented is a SIL eBV, but hogget oestrus eBV is not. SIL has a hogget fertility eBV which requires the practice of hogget mating. The management committee decided that the Central Progeny Test would not hogget mate so as to not comprise two tooth maternal performance. Therefore, date of first oestrus based on mating with vasectomised rams is used as a proxy measurement. They are related measurements, but are not the same trait, and so we present a separate eBV.

The table listing link sires used across sites and years has been removed from the booklet this year. This is because as many as possible sires are used by artificial insemination at as many of the three sites as possible, making most, or all, rams link sires.

This is the fourth year that accuracies for breeding values are presented. They appear in parentheses beside the eBVs in the tables. The accuracy values range from 0 to 100%. The higher the accuracy, the greater the amount of data available to calculate the eBV for the ram, and the less likely the eBV would change if additional progeny are measured.

This is also the fourth year that a table summarising the dual purpose performance of dual purpose rams is presented. The top 20 rams are listed on the basis of their dual purpose performance. The table ranks rams on the SIL "Dual Purpose Production" (DPP) index, and lists the sub-indexes that make up the DPP index, and the WormFEC and facial eczema breeding values, all of which are expressed in dollar terms.

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

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

There is a ram called "1980s Sires" in all of the dual purpose results tables. This is the average result 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 give a clear indication that significant genetic improvement has occurred since then.

HOW TO UNDERSTAND CENTRAL PROGENY TEST RESULTS

This booklet contains eBVs and indexes for rams used in the Alliance Central Progeny Test® and B+LNZ Central Progeny Test. A total of 260 rams have been evaluated in the Central Progeny Test to date. In addition, data from rams used in the Elite Lamb programme at Poukawa from 1998 to 2004 have been included for the evaluation of growth. However, no animals from Poukawa Elite Lamb programme are presented in the tables of results due to the aging policy.

Breeding values for the **top 25 terminal sire and top 25 dual purpose rams** are presented for each trait or index. An eBV 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. An eBV 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 an eBV, if a ram has an eBV 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 an eBV of -1.0kg for weaning weight, we would expect his progeny to be 0.5kg lighter than the Central Progeny Test average. A negative eBV 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 terminal sire breeds because they have been selected for many other traits. Thus, some of the better dual purpose rams for growth have negative eBVs simply because terminal sire rams are more likely to have high values.

A breeding index is a simple way of combining eBVs for a number of traits, with an economic weighting applied to each eBV 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 eBVs.

Some Central Progeny Test eBVs and indexes differ from those produced by the SIL genetic evaluation system in several ways. The Central Progeny Test collects additional measurements that are not routinely collected in the wider industry, or are analysed in a different way to SIL because of the experimental design. For example, eye muscle area (EMA) is measured in the Central Progeny Test from tracings of the loin at slaughter and in SIL from ultrasonic eye muscle depth and width. So CPT EMA eBVs are estimated from different data to the SIL EMA eBV.

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 User Manual and a number of technical documents.

Central Progeny Test results are also available to download on either the B+LNZ website (www.beeflambnz.co.nz), the SIL website (www.sil.co.nz) or the Alliance Group website (www.alliance.co.nz).

CENTRAL PROGENY TEST GROWTH INDEX* (\$)

Terminal:

Range: -\$1.11 to \$4.06

TAG	Flock	Breed	Sites	Progeny	Growth Index	Rank
241/04	Ohio	Poll Dorset	A08	34	\$4.06	1
296/05	Waikite / Esselmont & Tamlet	Texel	A09	31	\$3.68	2
231/08	Goldstream	Suffolk	A10	42	\$3.63	3
570/06	MegaMeat Glengarry	Poll Dorset	P08	83	\$3.38	4
447/03	Blackdale	Texel	P06	37	\$3.34	5
499/08	Arngibbon	Poll Dorset	A11	36	\$3.19	6
17/02	Tyane	Suffolk	P06	96	\$3.14	7
21/07	Castlerock & Takitimu	Poll Dorset	A12 W12	32	\$2.90	8
430/03	Glengarry	Poll Dorset	A05 P05 W05	117	\$2.86	9
25/99	Tyane	Suffolk	Link sire	799	\$2.77	10
341/05	Premier Suffolk	Suffolk	W09	37	\$2.76	11
299/01	Ohio	Poll Dorset	A04	34	\$2.72	12
J20/10	Inver	South Suffolk	A12 W12	60	\$2.58	13
33/04	Myola	South Suffolk	P06	52	\$2.52	14
402/07	MegaMeat Glengarry	Poll Dorset	P09	106	\$2.51	15
4208/06	Rissington Awapai	Primera	P10	50	\$2.48	16
10/10	Charollais Sheep NZ	Charollais	A12 W12	51	\$2.46	17
275/04	Goldstream	Suffolk	A07	54	\$2.32	18
81/06	South Suffolk NZ Myola	South Suffolk	W11	50	\$2.30	19
1010/03	Punchbowl	Suffolk	W07	34	\$2.25	20
867/06	Adelong	Poll Dorset	A10	40	\$2.24	21
48/05	Premier Suffolk	Suffolk	W08	38	\$2.20	22
486/08	Landcorp Kepler	Lamb Supreme	W10	23	\$2.16	23
543/07	Paki-iti	Suffolk	P11	96	\$2.14	24
61/04	Twin Farm	Suffolk	W06	31	\$1.99	25

Dual Purpose:

Range: -\$3.36 to \$3.15

TAG	Flock	Breed	Sites	Progeny	Growth Index	Rank
D110/04	Blackdale	Textra	W07	39	\$3.15	1
349/10	The Gree	Greeline	A12 W12	18	\$2.73	2
279/07	Cairnlea	Coopworth	A10	25	\$2.39	3
187/09	Twin Farm	TEFRom	W11	47	\$1.79	4
626/08	Blackdale	Texel	W10	27	\$1.60	5
409/06	Blythburn	Romney	W09	38	\$1.20	6
742/04	Cairnlea	Coopworth	W07	29	\$1.03	7
50394/06	Kelso	Kelso	A08 W09	51	\$1.02	8
1233/02	SRDG	Romney	W08	14	\$0.80	9
23253/05	Longdowns, SIL 916	Composite	W08	23	\$0.78	10
777/05	Tamlet	Coopworth	W08	36	\$0.75	11
245/04	Tamlet	Coopworth	W09	23	\$0.67	12
232/01	TRIGG	Romney	W03	21	\$0.54	13
1645/07	The Gree	Greeline	W10	37	\$0.51	14
542/04	Hazeldale	Perendale	W06	29	\$0.45	15
HG552/02	Clifton	Corriedale	A05	48	\$0.44	16
301/04	Hazeldale	Perendale	A08	21	\$0.43	17
2247/04	Rosedale	Growbulk	W07	35	\$0.29	18
50177/09	Kelso	Kelso	P11	43	\$0.23	19
3091/08	Rosedale	Growbulk	A11	25	\$0.05	20
358/04	MNCC	Coopworth	P07	43	\$0.02	21
97/02	Raywell	Borderdale	A03 A04	48	-\$0.04	22
1227/06	Ngaputahi	Growbulk	P09 P10	119	-\$0.04	23
627/01	TRIGG	Romney	A06	73	-\$0.06	24
7180/08	Landcorp Waihora	Romney	W10	30	-\$0.08	25
5 sires	1980s sires	Romney	W07	18	-\$2.85	94

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

CENTRAL PROGENY TEST MEAT VALUE INDEX* (\$)

Terminal:

Range: -\$2.30 to \$5.43

TAG	Flock	Breed	Sites	Progeny	Meat Value Index	Rank
530/05	Grasmere	Texel	P08	39	\$5.43	1
642/09	Premier Texel	Texel	P11	46	\$3.58	2
141/04	Crest	Texel	W10	32	\$3.39	3
914/08	Southern Texel Breeders Group	Texel	W11	47	\$3.04	4
1668/08	Mt Linton	Texel	A12 W12	46	\$3.02	5
207/09	Kowhai Glen	Texel	W12	59	\$2.99	6
1662/09	Focus Genetics Lamb Supreme	Lamb Supreme	A12 W12	41	\$2.97	7
294/10	Premier Suftex Group	Suftex	A12 W12	46	\$2.82	8
110/03	Murray Downs	Texel	W05	37	\$2.73	9
275/04	Goldstream	Suffolk	A07	54	\$2.69	10
323/07	Tamlet	Texel	P12 W12	79	\$2.35	11
TB126/08	The Burn	Texel	A11	33	\$2.31	12
101/03	Landover	Texel	W07	22	\$2.29	13
114/03	Landcorp Kepler	Lamb Supreme	A05	33	\$2.22	14
Y302/07	Waterton	Suffolk	A12 W12	48	\$2.15	15
52/04	Mount Linton	Suftex	W06	34	\$2.11	16
299/01	Ohio	Poll Dorset	A04	34	\$2.09	17
486/08	Landcorp Kepler	Lamb Supreme	W10	23	\$2.07	18
44/02	WTD	Texel	P05	50	\$1.97	19
1296/03	Mount Linton	Texel Cross	W05	41	\$1.93	20
105/05	Fairlea	Texel	P10	51	\$1.82	21
570/06	MegaMeat Glengarry	Poll Dorset	P08	83	\$1.79	22
296/05	Waikite / Esselmont & Tamlet	Texel	A09	31	\$1.77	23
63/08	Longfield	SAMM (Meat Merino)	A10	53	\$1.66	24
89/05	South Suffolk Breeders	South Suffolk	A08	30	\$1.57	25

Dual Purpose:

Range: -\$2.78 to \$3.46

TAG	Flock	Breed	Sites	Progeny	Meat Value Index	Rank
D110/04	Blackdale	Textra	W07	39	\$3.46	1
50394/06	Kelso	Kelso	A08 W09	51	\$2.55	2
626/08	Blackdale	Texel	W10	27	\$2.31	3
66/08	Brenley	Texel	A12 W12	30	\$2.17	4
1645/07	The Gree	Greeline	W10	37	\$1.80	5
50177/09	Kelso	Kelso	P11	43	\$1.79	6
187/09	Twin Farm	TEFRom	W11	47	\$1.77	7
3091/08	Rosedale	Growbulk	A11	25	\$1.39	8
406/06	MNCC	Coopworth	P10	39	\$1.23	9
386/03	Rene	Perendale	A07	33	\$1.23	10
569/07	Longview	Perendale	P09	84	\$1.17	11
4203/02	Kelso	Kelso	P06	39	\$1.17	12
301/04	Hazeldale	Perendale	A08	21	\$1.07	13
198/09	SRDG	Romney	W11	35	\$1.07	14
431/04	Twin Farm	TEFRom	W07	23	\$0.91	15
88/02	TRIGG	Romney	W05	26	\$0.82	16
23253/05	Longdowns, SIL 916	Composite	W08	23	\$0.76	17
401/05	Hazeldale	Perendale	W08	39	\$0.60	18
179/07	Wattlebank	Corriedale	A09	34	\$0.54	19
358/04	MNCC	Coopworth	P07	43	\$0.51	20
774/02	Flockton	Perendale	A04	37	\$0.40	21
1227/06	Ngaputahi	Growbulk	P09 P10	119	\$0.40	22
132/01	Kelso	Kelso	W03	31	\$0.35	23
544/07	Lincoln	Coopworth	W11	45	\$0.33	24
574/06	Kylemore	Perendale	A08	21	\$0.31	25
5 sires	1980s sires	Romney	W07	18	-\$0.97	62

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

WEANING WEIGHT EBV* (KG)

Terminal:

Range: -1.15 to 4.95

TAG	Flock	Breed	Sites	Progeny	WWT eBV (Acc)	Rank
17/02	Tyane	Suffolk	P06	106	4.95 (88)	1
296/05	Waikite / Esselmont & Tamlet	Texel	A09	32	4.04 (75)	2
447/03	Blackdale	Texel	P06	43	3.90 (80)	3
231/08	Goldstream	Suffolk	A10	41	3.88 (80)	4
25/99	Tyane	Suffolk	Link Sire	860	3.61 (99)	5
33/04	Myola	South Suffolk	P06	60	3.57 (84)	6
241/04	Ohio	Poll Dorset	A08	37	3.55 (78)	7
341/05	Premier Suffolk	Suffolk	W09	37	3.51 (78)	8
543/07	Paki-iti	Suffolk	P11	98	3.44 (79)	9
10/10	Charollais Sheep NZ	Charollais	A12 W12	53	3.42 (84)	10
570/06	MegaMeat Glengarry	Poll Dorset	P08	98	3.34 (88)	11
430/03	Glengarry	Poll Dorset	A05 P05 W05	126	3.24 (91)	12
402/07	MegaMeat Glengarry	Poll Dorset	P09	113	3.06 (90)	13
499/08	Arngibbon	Poll Dorset	A11	35	3.00 (77)	14
1010/03	Punchbowl	Suffolk	W07	34	2.98 (77)	15=
21/07	Castlerock & Takitimu	Poll Dorset	A12 W12	33	2.98 (77)	15=
867/06	Adelong	Poll Dorset	A10	34	2.85 (77)	17
J20/10	Inver	South Suffolk	A12 W12	60	2.80 (85)	18
169/02	Ohio	Poll Dorset	W06	37	2.71 (78)	19
275/04	Goldstream	Suffolk	A07	53	2.52 (81)	20
48/05	Premier Suffolk	Suffolk	W08	39	2.45 (79)	21
130/05	Belview	Dorset Down	A07	69	2.43 (84)	22
105/05	Fairlea	Texel	P10	56	2.32 (84)	23
486/08	Landcorp Kepler	Lamb Supreme	W10	24	2.29 (72)	24
80/03	Silverhope	Poll Dorset	P06	51	2.24 (82)	25

Dual Purpose:

Range: -3.97 to 3.73

TAG	Flock	Breed	Sites	Progeny	WWT eBV (Acc)	Rank
349/10	The Gree	Greeline	A12 W12	53	3.73 (84)	1
279/07	Cairnlea	Coopworth	A10	46	3.60 (82)	2
D110/04	Blackdale	Textra	W07	85	3.50 (89)	3
187/09	Twin Farm	TEFRom	W11	96	3.19 (89)	4
409/06	Blythburn	Romney	W09	69	2.05 (87)	5
742/04	Cairnlea	Coopworth	W07	79	1.93 (89)	6
626/08	Blackdale	Texel	W10	62	1.75 (86)	7
1233/02	SRDG	Romney	W08	34	1.53 (81)	8
232/01	TRIGG	Romney	W03	21	1.31 (71)	9
50177/09	Kelso	Kelso	P11	117	1.27 (79)	10
245/04	Tamlet	Coopworth	W09	70	1.26 (87)	11
HG552/02	Clifton	Corriedale	A05	123	1.24 (90)	12
50394/06	Kelso	Kelso	A08 W09	109	1.18 (91)	13
23253/05	Longdowns, SIL 916	Composite	W08	70	1.11 (88)	14
833/02	Tamlet	Coopworth	W05 W06	133	0.96 (92)	15
542/04	Hazeldale	Perendale	W06	68	0.87 (87)	16
97/02	Raywell	Borderdale	A03 A04	79	0.75 (88)	17
2247/04	Rosedale	Growbulk	W07	74	0.74 (88)	18=
1645/07	The Gree	Greeline	W10	97	0.74 (90)	18=
D611/04	Glenovis	Corriedale	A07	95	0.50 (88)	20
512/05	Kamahi	Perendale	W07	28	0.46 (79)	21
777/05	Tamlet	Coopworth	W08	80	0.43 (88)	22
627/01	TRIGG	Romney	A06	127	0.25 (91)	23
32/05	TRIGG	Romney	W10	64	0.20 (87)	24
358/04	MNCC	Coopworth	P07	99	0.18 (90)	25
5 sires	1980s sires	Romney	W07	32	-3.65 (80)	97

*SIL eBV. The average weaning weight was 29.7kg

WORMFEC eBV* (%)

Terminal:

Range: 96.6% to -30.8%

TAG	Flock	Breed	Sites	Progeny	WormFEC eBV (Acc)	Rank
533/11	Longdowns, SIL 746	Composite	A12	14	-30.8 (61)	1
44/02	WTD	Texel	P05	14	-30.8 (58)	2
Y302/07	Waterton	Suffolk	A12 W12	22	-29.3 (69)	3
10/10	Charollais Sheep NZ	Charollais	A12 W12	27	-26.1 (72)	4
3/04	Egilshay	Texel	A08	32	-23.7 (72)	5
167/02	MEBA	Texel	W04	16	-23.5 (72)	6
9/03	Pahiwi	Suffolk	P05	15	-21.4 (61)	7
110/03	Murray Downs	Texel	W05	16	-20.6 (60)	8
49/05	MegaMeat	Poll Dorset	P07	16	-17.4 (61)	9
19/03	Tasvic Downs	Southdown	P05	15	-17.1 (59)	10
TB126/08	The Burn	Texel	A11	15	-17.1 (62)	11
499/08	Arngibbon	Poll Dorset	A11	16	-17.0 (63)	12
252/05	Brandes Burton	Texel	W09	14	-16.7 (58)	13
24/07	Punchbowl	Suffolk	W10	16	-16.4 (61)	14
65/03	Pahiwi	Suffolk	A06	36	-16.1 (74)	15
63/08	Longfield	SAMM (Meat Merino)	A10	16	-15.5 (62)	16
6/09	Megameat Glengarry	Poll Dorset	P11	16	-11.7 (57)	17
236/07	Pahiwi	Suffolk	P09	15	-11.5 (63)	18
62/02	Silverstream	Dorset Down	W05	16	-11.1 (60)	19
4208/06	Rissington Awapai	Primera	P10	15	-11.0 (58)	20
18/02	Brandes Burton	Texel	A07	25	-11.0 (68)	21
127/05	Douglas Downs	Poll Dorset	W07	16	-10.9 (62)	22
25/99	Tyane	Suffolk	Link sire	231	-10.3 (94)	23
78/02	Lincoln	Dorset Down	W04	16	-8.5 (59)	24
48/05	Premier Suffolk	Suffolk	W08	16	-8.0 (61)	25

Dual Purpose:

Range: 104.66% to -51.9%

TAG	Flock	Breed	Sites	Progeny	WormFEC eBV (Acc)	Rank
386/03	Rene	Perendale	A07	25	-51.9 (76)	1
722/03	Rosemains	Perendale	W05	16	-51.2 (75)	2
5 sires	1980s sires	Romney	W07	16	-45.1 (70)	3
198/09	SRDG	Romney	W11	16	-44.7 (64)	4
649/01	ARDG	Romney	P06	8	-36.2 (60)	5
4203/02	Kelso	Kelso	P06	8	-35.6 (57)	6
1035/02	Newhaven	Perendale	W04	16	-34.8 (73)	7
JL1695/1	WRIG	Romney	P05	13	-34.5 (57)	8
1617/04	Awareka	Romney	W07	16	-32.0 (77)	9
348/06	Sponsored Romney	Romney	A08	58	-31.8 (81)	10
77/09	Ashgrove	Coopworth	A12 W12	32	-30.0 (75)	11
347/05	ARDG	Romney	P11	15	-28.8 (51)	12
300/03	MNCC	Coopworth	W05	16	-27.7 (74)	13
132/01	Kelso	Kelso	W03	16	-25.7 (65)	14
574/06	Kylemore	Perendale	A08	28	-25.6 (74)	15
626/08	Blackdale	Texel	W10	16	-25.5 (65)	16
50394/06	Kelso	Kelso	A08 W09	37	-25.2 (80)	17
84/04	ARDG Elite	Romney	P07	14	-24.4 (73)	18
50177/09	Kelso	Kelso	P11	14	-24.3 (50)	19
127/06	Avalon	Perendale	W10	17	-22.8 (65)	20
147/01	Tresco	Romney	W05	17	-22.6 (70)	21
547/02	Alpha Genetics	Romney	W09	13	-22.2 (62)	22
279/07	Cairnlea	Coopworth	A10	21	-20.9 (70)	23
179/07	Wattlebank	Corriedale	A09	27	-18.8 (75)	24
140/09	MNCC	Coopworth	A12 W12	42	-18.7 (79)	25

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

EYE MUSCLE AREA EBV* (cm²)

Terminal:

Range: -1.44 to 3.27

TAG	Flock	Breed	Sites	Progeny	EMA eBV(Acc)	Rank
299/01	Ohio	Poll Dorset	A04	34	3.27 (91)	1
114/03	Landcorp Kepler	Lamb Supreme	A05	33	3.19 (91)	2
2002/02	Mount Linton	Texel Cross	A04	34	2.70 (91)	3
570/06	MegaMeat Glengarry	Poll Dorset	P08	83	2.67 (94)	4
530/05	Grasmere	Texel	P08	39	2.63 (90)	5
323/07	Tamlet	Texel	P12 W12	79	2.61 (94)	6
1694/05	Landcorp Kepler	Lamb Supreme	P09	28	2.56 (89)	7
91892/05	Kelso	Kelso Ranger	P08	52	2.50 (92)	8
34/06	Southern Poll Dorset	Poll Dorset	W08	50	2.42 (91)	9
127/05	Douglas Downs	Poll Dorset	W07	32	2.37 (88)	10
141/04	Crest	Texel	W10	32	2.36 (90)	11
101/08	Longdowns, SIL 746	Composite	W11	51	2.32 (92)	12
486/08	Landcorp Kepler	Lamb Supreme	W10	23	2.14 (86)	13
914/08	Southern Texel Breeders Group	Texel	W11	47	2.12 (92)	14
65/03	Pahiwi	Suffolk	A06	53	2.06 (93)	15
642/09	Premier Texel	Texel	P11	46	2.05 (92)	16
1344/09	Mount Linton	Texel Cross	W11	40	1.99 (91)	17
33/01	RBL Rissington	Primera	W04	29	1.96 (88)	18
T210/04	Wharetoa	Meatmaker	W06	34	1.94 (90)	19
021/01	Broken Hut	Texel	A03	29	1.93 (90)	20
430/03	Glengarry	Poll Dorset	A05 P05 W05	117	1.88 (96)	21
4208/06	Rissington Awapai	Primera	P10	50	1.88 (91)	22
3/04	Egilshay	Texel	A08	69	1.85 (94)	23
485/05	Mount Linton	Texel/Poll Dorset	W09	20	1.82 (85)	24
341/05	Premier Suffolk	Suffolk	W09	37	1.78 (90)	25

Dual Purpose:

Range: -2.46 to 2.65

TAG	Flock	Breed	Sites	Progeny	EMA eBV (Acc)	Rank
D110/04	Blackdale	Textra	W07	39	2.65 (93)	1
1560/03	The Gree	Greeline	W06	25	2.06 (92)	2
626/08	Blackdale	Texel	W10	27	1.90 (90)	3
23253/05	Longdowns, SIL 916	Composite	W08	23	1.41 (91)	4
2247/04	Rosedale	Growbulk	W07	35	0.90 (92)	5
138/01	Edale	Growbulk	A03	34	0.89 (91)	6
829/08	Rangiatea	Perendale	A10 A11	97	0.85 (95)	7
127/06	Avalon	Perendale	W10	15	0.75 (85)	8
70/08	Longview Perendales	Perendale	P12	87	0.72 (92)	9
124/07	Rosemains	Perendale	W11	40	0.71 (92)	10
512/05	Kamahi	Perendale	W07	14	0.67 (86)	11
722/03	Rosemains	Perendale	W05	36	0.58 (94)	12
66/08	Brenley	Texel	A12 W12	30	0.54 (90)	13
55/01	Bonnieview	Perendale	W05	20	0.31 (90)	14
357/10	Orari Gorge Romneys	Romney	A12 W12	29	0.29 (90)	15
50177/09	Kelso	Kelso	P11	43	0.28 (91)	16
409/06	Blythburn	Romney	W09	38	0.26 (92)	17
542/04	Hazeldale	Perendale	W06	29	0.18 (92)	18
11/01	Little River	Cheviot	A03 W03	60	0.15 (94)	19
569/07	Longview	Perendale	P09	84	-0.01 (95)	20
JL1695/1	WRIG	Romney	P05	36	-0.01 (90)	21
300/03	MNCC	Coopworth	W05	27	-0.05 (93)	22
415/08	Mapari	Perendale	A11	22	-0.06 (88)	23
4203/02	Kelso	Kelso	P06	39	-0.06 (94)	24
401/05	Hazeldale	Perendale	W08	39	-0.06 (93)	25
5 sires	1980s sires	Romney	W07	18	-0.19 (87)	30

**EMA eBV is carcass weight adjusted. The average eye muscle area was 11.9cm²*

DAG SCORE eBV*

Terminal:

Range: 1.26 to -1.36

TAG	Flock	Breed	Sites	Progeny	EMA eBV(Acc)	Rank
252/05	Brandes Burton	Texel	W09	25	-1.36 (82)	1
486/08	Landcorp Kepler	Lamb Supreme	W10	23	-1.12 (81)	2
26/08	Charollais Sheep NZ	Charollais	W11	33	-1.08 (85)	3
269/04	Dorper	Dorper	W08	45	-1.07 (88)	4
1344/09	Mount Linton	Texel Cross	W11	43	-1.05 (88)	5
81/06	South Suffolk NZ Myola	South Suffolk	W11	51	-1.02 (89)	6
570/06	MegaMeat Glengarry	Poll Dorset	P08	97	-0.91 (92)	7
543/07	Paki-iti	Suffolk	P11	96	-0.89 (78)	8
430/03	Glengarry	Poll Dorset	A05 P05 W05	98	-0.79 (93)	9
402/07	MegaMeat Glengarry	Poll Dorset	P09	113	-0.76 (93)	10
458/02	Landcorp Waikite	Texel	A06	27	-0.76 (84)	11
642/09	Premier Texel	Texel	P11	45	-0.73 (87)	12
275/04	Goldstream	Suffolk	A07	53	-0.73 (88)	13
323/07	Tamlet	Texel	P12 W12	78	-0.63 (85)	14
61/04	Twin Farm	Suffolk	W06	31	-0.61 (75)	15
169/02	Ohio	Poll Dorset	W06	37	-0.60 (80)	16
17/02	Tyane	Suffolk	P06	105	-0.57 (84)	17
376/03	Douglas Downs	Dorset Horn	W05	67	-0.54 (91)	18
26/08	Douglas Downs	Poll Dorset	W10	37	-0.53 (86)	19
194/08	Valdor	Suffolk	P10	33	-0.52 (82)	20
914/08	Southern Texel Breeders Group	Texel	W11	48	-0.52 (89)	21
304/08	MegaMeat	Poll Dorset	P10	57	-0.51 (83)	22
44/02	WTD	Texel	P05	48	-0.47 (83)	23
34/06	Southern Poll Dorset	Poll Dorset	W08	53	-0.47 (89)	24
696/07	Premier Suftex Group	Suftex	W11	44	-0.47 (88)	25

Dual Purpose:

Range: 1.35 to -1.52

TAG	Flock	Breed	Sites	Progeny	EMA eBV (Acc)	Rank
626/08	Blackdale	Texel	W10	62	-1.52 (91)	1
D110/04	Blackdale	Textra	W07	85	-1.40 (93)	2
1002/03	Mt Guardian	Perendale	W06	59	-1.03 (87)	3
301/04	Hazeldale	Perendale	A08	51	-0.75 (89)	4
198/09	SRDG	Romney	W11	68	-0.72 (91)	5
1295/10	Focus Genetics Romney	Romney	A12 W12	73	-0.66 (92)	6
34/01	Twin Farm	TEFRom	W03 W06	114	-0.61 (94)	7
50394/06	Kelso	Kelso	A08 W09	109	-0.57 (95)	8
18/04	White Rock	Corriedale	A06	73	-0.52 (92)	9
66/08	Brenley	Texel	A12 W12	74	-0.49 (92)	10
1227/06	Ngaputahi	Growbulk	P09 P10	238	-0.47 (95)	11
23253/05	Longdowns, SIL 916	Composite	W08	69	-0.40 (93)	12
512/05	Kamahi	Perendale	W07	28	-0.40 (86)	13
349/10	The Gree	Greeline	A12 W12	53	-0.39 (90)	14
358/04	MNCC	Coopworth	P07	98	-0.36 (80)	15=
722/03	Rosemains	Perendale	W05	96	-0.36 (94)	15=
1645/07	The Gree	Greeline	W10	97	-0.34 (93)	17
4203/02	Kelso	Kelso	P06	92	-0.33 (90)	18
386/03	Rene	Perendale	A07	71	-0.33 (92)	19
6448/07	TRIGG	Romney	A10	61	-0.32 (90)	20
11/01	Little River	Cheviot	A03 W03	33	-0.31 (85)	21
542/04	Hazeldale	Perendale	W06	67	-0.30 (89)	22
232/01	TRIGG	Romney	W03	21	-0.28 (80)	23
55/01	Bonnieview	Perendale	W05	61	-0.28 (91)	24
D611/04	Glenovis	Corriedale	A07	95	-0.24 (93)	25
5 sires	1980s sires	Romney	W07	32	0.67 (86)	85

*SIL eBV. Dags are scored on a scale of 0 to 5, where 0 is for no dags and 5 is the most daggy

NUMBER OF LAMBS BORN EBV*

Dual Purpose:

Range: -0.27 to 0.54

TAG	Flock	Breed	Sites	Daughters lambbed	NLB eBV (Acc)	Rank
1617/04	Awareka	Romney	W07	167	0.54 (95)	1
742/04	Cairnlea	Coopworth	W07	162	0.50 (95)	2
214/05	TRIGG	Romney	W08	278	0.50 (95)	3
134/03	Hinenui	Coopworth	P08	223	0.42 (95)	4
279/07	Cairnlea	Coopworth	A10	53	0.40 (84)	5
4334/07	Landcorp Waihora	Romney	Link sire	194	0.39 (91)	6
147/01	Tresco	Romney	W05	235	0.38 (96)	7
1218/06	Hinenui	Coopworth	A09	156	0.38 (92)	8
300/03	MNCC	Coopworth	W05	516	0.36 (97)	9
480/04	View Hill	Romney	A09	82	0.35 (89)	10
50394/06	Kelso	Kelso	A08 W09	139	0.34 (90)	11
4399/06	Landcorp Waihora	Romney	P08	195	0.30 (94)	12
1560/03	The Gree	Greeline	W06	136	0.29 (93)	13
245/04	Tamlet	Coopworth	W09	99	0.29 (90)	14
313/01	Valley	Coopworth	W04	81	0.28 (91)	15
1035/02	Newhaven	Perendale	W04	221	0.24 (97)	16
278/03	MNCC	Coopworth	W06	80	0.24 (89)	17
4/06	Corriedale Breeder Group	Corriedale	A08	64	0.24 (87)	18
417/04	ARDG	Romney	P08	200	0.23 (93)	19
179/07	Wattlebank	Corriedale	A09	41	0.23 (80)	20
777/05	Tamlet	Coopworth	W08	84	0.22 (91)	21=
5828/02	Landcorp Waihora	Romney	W04	55	0.22 (89)	21=
84/04	ARDG Elite	Romney	P07	71	0.22 (89)	23
34/01	Twin Farm	TEFRom	W03 W06	145	0.22 (93)	24
5203/04	Marlow	Coopworth	Link sire	438	0.21 (97)	25
5 sires	1980s sires	Romney	W07	11	0.00 (64)	71

*SIL ACE eBV. Results are for rams with at least 20 daughters with two-tooth lambing records

HOGGET OESTRUS EBV (DAYS)

Dual Purpose:

Range: 12.2 to -9.6

TAG	Flock	Breed	Sites	Progeny	Hog Oestrus (Acc)	Rank
349/10	The Gree	Greeline	A12 W12	29	-9.6 (70)	1
742/04	Cairnlea	Coopworth	W07	43	-8.8 (78)	2
4/06	Corriedale Breeder Group	Corriedale	A08	20	-8.4 (66)	3
50394/06	Kelso	Kelso	A08 W09	49	-7.8 (79)	4
77/09	Ashgrove	Coopworth	A12 W12	34	-7.2 (73)	5
23253/05	Longdowns, SIL 916	Composite	W08	38	-7.1 (77)	6
66/08	Brenley	Texel	A12 W12	38	-6.8 (75)	7
1645/07	The Gree	Greeline	W10	50	-6.6 (78)	8
140/09	MNCC	Coopworth	A12 W12	43	-6.0 (76)	9
50177/09	Kelso	Kelso	P11	51	-5.7 (58)	10
544/07	Lincoln	Coopworth	W11	36	-5.6 (73)	11
187/09	Twin Farm	TEFRom	W11	38	-5.5 (74)	12
4203/02	Kelso	Kelso	P06	40	-4.7 (73)	13
406/06	MNCC	Coopworth	P10	36	-4.7 (62)	14
34/01	Twin Farm	TEFRom	W03 W06	46	-4.4 (79)	15
7180/08	Landcorp Waihora	Romney	W10	36	-4.2 (74)	16
198/09	SRDG	Romney	W11	24	-3.9 (67)	17
18/04	White Rock	Corriedale	A06	39	-3.7 (73)	18
1560/03	The Gree	Greeline	W06	25	-3.5 (72)	19
431/04	Twin Farm	TEFRom	W07	32	-3.3 (72)	20
1227/06	Ngaputahi	Growbulk	P09 P10	86	-3.2 (78)	21
301/04	Hazeldale	Perendale	A08	16	-3.1 (62)	22
1233/02	SRDG	Romney	W08	13	-3.1 (59)	23
134/03	Hinenui	Coopworth	P08	40	-2.7 (69)	24
218/02	Waiohine	Romney	P07	49	-2.7 (73)	25
5 sires	1980s sires	Romney	W07	10	7.7 (57)	75

FLEECE WEIGHT EBV* (KG)

Dual Purpose:

Range: -0.87 to 0.85

TAG	Flock	Breed	Sites	Progeny	FW12 eBV (Acc)	Rank
742/04	Cairnlea	Coopworth	W07	40	0.85 (88)	1
956/09	Colhoun	Coopworth	A11	13	0.82 (74)	2
1832/02	Awareka	Romney	W04 A04	74	0.69 (87)	3=
544/07	Lincoln	Coopworth	W11	36	0.69 (85)	3=
313/01	Valley	Coopworth	W04	32	0.60 (87)	5
187/09	Twin Farm	TEFRom	W11	75	0.47 (86)	6
406/06	MNCC	Coopworth	P10	34	0.46 (78)	7
358/04	MNCC	Coopworth	P07	46	0.42 (85)	8
278/03	MNCC	Coopworth	W06	76	0.35 (86)	9
279/07	Cairnlea	Coopworth	A10	12	0.34 (74)	10
5828/02	Landcorp Waihora	Romney	W04	42	0.33 (89)	11
348/06	Sponsored Romney	Romney	A08	77	0.31 (86)	12
1617/04	Awareka	Romney	W07	36	0.28 (86)	13
4399/06	Landcorp Waihora	Romney	P08	28	0.27 (82)	14=
218/02	Waiohine	Romney	P07	78	0.27 (86)	14=
5203/04	Marlow	Coopworth	Link sire	172	0.26 (96)	16
412/06	Anui	Romney	W09	18	0.24 (79)	17=
245/04	Tamlet	Coopworth	W09	79	0.24 (86)	17=
7180/08	Landcorp Waihora	Romney	W10	36	0.17 (85)	19
833/02	Tamlet	Coopworth	W05 W06	80	0.16 (88)	20
1233/02	SRDG	Romney	W08	15	0.14 (77)	21
4/06	Corriedale Breeder Group	Corriedale	A08	21	0.11 (81)	22
1645/07	The Gree	Greeline	W10	50	0.09 (88)	23
4334/07	Landcorp Waihora	Romney	Link sire	82	0.08 (96)	24
512/05	Kamahi	Perendale	W07	13	0.05 (74)	25
5 sires	1980s sires	Romney	W07	104	-0.52 (73)	90

*SIL eBV. Breeding values for fleece weight at 12 months of age. Average fleece weight was 3.11kg

FACIAL ECZEMA EBV★

Dual Purpose:

Range: 1.02 to -1.03

TAG	Flock	Breed	Sites	Progeny	GGT21 eBV (Acc)	Rank
649/01	ARDG	Romney	P06	36	-1.03 (90)	1
7180/08	Landcorp Waihora	Romney	W10	20	-1.01 (88)	2
4399/06	Landcorp Waihora	Romney	P08	32	-0.93 (91)	3
4499/09	Landcorp Waihora	Romney	W11	26	-0.83 (88)	4
1295/10	Focus Genetics Romney	Romney	A12 W12	11	-0.82 (82)	5
4334/07	Landcorp Waihora	Romney	Link sire	61	-0.78 (93)	6
179/07	Wattlebank	Corriedale	A09	5	-0.71 (61)	7
347/05	ARDG	Romney	P11	20	-0.64 (86)	8
115/05	ARDG	Romney	P09	28	-0.54 (86)	9=
77/09	Ashgrove	Coopworth	A12 W12	11	-0.54 (78)	9=
5203/04	Marlow	Coopworth	Link sire	63	-0.53 (91)	11
214/05	TRIGG	Romney	W08	5	-0.52 (61)	12
50394/06	Kelso	Kelso	A08 W09	5	-0.49 (62)	13=
278/03	MNCC	Coopworth	W06	11	-0.49 (82)	13=
722/03	Rosemains	Perendale	W05	5	-0.48 (66)	15
279/07	Cairnlea	Coopworth	A10	5	-0.47 (55)	16
1645/07	The Gree	Greeline	W10	5	-0.44 (59)	17
118/09	ARDG	Romney	P12	13	-0.41 (79)	18
4/06	Corriedale Breeder Group	Corriedale	A08	6	-0.37 (63)	19
4203/02	Kelso	Kelso	P06	5	-0.36 (56)	20
218/02	Waiohine	Romney	P07	5	-0.35 (58)	21
386/03	Rene	Perendale	A07	5	-0.33 (54)	22
6448/07	TRIGG	Romney	A10	5	-0.32 (55)	23
415/08	Mapari	Perendale	A11	6	-0.31 (60)	24

*SIL ACE eBV. The amount of the liver enzyme GGT present after challenging progeny with sporidesmin

TOP 20 TERMINAL RAMS FOR MEAT AND GROWTH

TAG	Flock	Breed	Meat & growth index* (\$)	Meat Value Index (\$)	Growth Index (\$)	WWT eBV (kg)	Worm FEC eBV (%)	EMA eBV (cm2)	Dress % eBV (%)	Fat colour eBV (b*)	Meat colour eBV (a*)	pH eBV
530/05	Grasmere	Texel	7.00	5.43	1.57	1.03	0.3	2.63	1.75	0.36	-0.11	-0.01
296/05	Waikite / Esselmont & Tamlet	Texel	5.45	1.77	3.68	4.04	-6.0	0.78	0.18	-0.33	-0.10	0.01
570/06	MegaMeat Glengarry	Poll Dorset	5.17	1.79	3.38	3.34	33.5	2.67	0.99	-0.87	-1.13	-0.02
241/04	Ohio	Poll Dorset	5.03	0.98	4.06	3.55	51.9	0.85	0.11	0.12	-0.52	-0.04
275/04	Goldstream	Suffolk	5.01	2.69	2.32	2.52	96.6	1.73	-1.34	0.53	0.06	0.01
299/01	Ohio	Poll Dorset	4.81	2.09	2.72	1.54	72.2	3.27	0.47	-1.41	-0.17	0.00
914/08	Southern Texel Breeders Group	Texel	4.59	3.04	1.56	1.67	48.2	2.12	1.02	-3.96	1.43	-0.06
207/09	Kowhai Glen	Texel	4.26	2.99	1.26	1.54	-10.1	0.23	1.08	0.43	-0.29	0.00
1662/09	Focus Genetics Lamb Supreme	Lamb Supreme	4.23	2.97	1.26	0.97	17.3	-0.32	0.68	-0.14	-0.60	0.02
486/08	Landcorp Kepler	Lamb Supreme	4.23	2.07	2.16	2.29	19.1	2.14	0.89	-1.51	-1.23	0.03
1668/08	Mt Linton	Texel	4.07	3.02	1.05	1.19	7.4	0.56	0.82	-0.36	0.52	0.05
141/04	Crest	Texel	4.04	3.39	0.64	-0.01	33.6	2.36	1.36	-1.46	-0.06	0.01
499/08	Arngibbon	Poll Dorset	3.97	0.78	3.19	3.00	-17.0	-1.09	-0.45	-0.02	0.41	0.01
447/03	Blackdale	Texel	3.95	0.61	3.34	3.90	-0.6	1.31	0.32	-3.88	-0.15	0.00
25/99	Tyane	Suffolk	3.91	1.15	2.77	3.61	-10.3	0.35	-0.99	2.11	-0.71	0.03
341/05	Premier Suffolk	Suffolk	3.79	1.03	2.76	3.51	9.2	1.78	0.05	-0.50	0.17	0.01
231/08	Goldstream	Suffolk	3.69	0.06	3.63	3.88	-0.7	-0.94	-0.94	0.93	-0.06	0.07
48/05	Premier Suffolk	Suffolk	3.67	1.47	2.20	2.45	-8.0	0.02	0.18	-0.16	-0.27	0.00
10/10	Charollais Sheep NZ	Charollais	3.63	1.18	2.46	3.42	-26.1	-1.31	-0.98	0.01	-0.01	0.04
323/07	Tamlet	Texel	3.56	2.35	1.21	0.16	8.1	2.61	2.47	-1.51	-0.25	-0.03

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

Positive (i.e. higher) values are better for all traits except WormFEC, fat colour and pH eBV where a negative (i.e. lower) value is better.

TOP 20 DUAL PURPOSE RAMS FOR MEAT AND GROWTH

TAG	Flock	Breed	Meat & growth Index* (\$)	Meat Value Index (\$)	Growth Index (\$)	WWT eBV (kg)	Worm FEC eBV (%)	EMA eBV (cm2)	Dress % eBV (%)	Fat colour eBV (b*)	Meat colour eBV (a*)	pH eBV	NLB eBV	FW12 eBV (kg)	FE eBV
D110/04	Blackdale	Textra	6.62	3.46	3.15	3.50	-18.0	2.65	0.72	-1.85	-0.12	0.01	-0.05	-0.78	0.01
626/08	Blackdale	Texel	3.91	2.31	1.60	1.75	-25.5	1.90	0.48	-1.24	-0.20	0.01	0.11	-0.09	0.77
50394/06	Kelso	Kelso	3.58	2.55	1.02	1.18	-25.2	-0.84	-0.18	-0.54	-0.48	0.09	0.34	-0.71	-0.49
187/09	Twin Farm	TEFRom	3.56	1.77	1.79	3.19	8.4	-0.85	-0.47	-1.99	-0.71	0.03		0.47	-0.26
1645/07	The Gree	Greeline	2.31	1.80	0.51	0.74	-13.2	-0.23	0.11	0.20	-0.52	0.03	0.12	0.09	-0.44
349/10	The Gree	Greeline	2.22	-0.51	2.73	3.73	54.1	-1.51	-0.92	-0.82	-0.06	-0.06			0.02
50177/09	Kelso	Kelso	2.02	1.79	0.23	1.27	-24.3	0.28	0.26	-0.20	-0.99	0.08		-0.46	0.11
23253/05	Longdowns, SIL 916	Composite	1.53	0.76	0.78	1.11	29.6	1.41	-0.24	0.92	-0.51	-0.01	-0.11	-0.12	0.09
301/04	Hazeldale	Perendale	1.50	1.07	0.43	0.15	-13.7	-1.91	-1.19	0.28	0.03	-0.03	-0.04	-0.14	-0.05
3091/08	Rosedale	Growbulk	1.44	1.39	0.05	-0.37	25.4	-0.14	-0.38	0.46	0.44	-0.02		0.02	-0.17
279/07	Cairnlea	Coopworth	1.38	-1.02	2.39	3.60	-20.9	-0.69	-0.34	1.29	0.56	-0.04	0.40	0.34	-0.47
409/06	Blythburn	Romney	1.06	-0.14	1.20	2.05	8.4	0.26	-1.17	-0.73	-0.06	0.03	-0.01	-0.06	0.24
66/08	Brenley	Texel	1.05	2.17	-1.12	-0.79	-7.2	0.54	1.30	-0.57	-0.21	0.01			-0.08
406/06	MNCC	Coopworth	0.96	1.23	-0.27	-0.10	8.1	-0.33	-0.91	0.63	1.03	-0.02	0.13	0.46	-0.20
542/04	Hazeldale	Perendale	0.65	0.20	0.45	0.87	8.3	0.18	-0.70	1.08	0.17	-0.01	0.18	-0.48	-0.19
358/04	MNCC	Coopworth	0.52	0.51	0.02	0.18	23.0	-0.95	-0.79	1.19	1.09	-0.04	0.19	0.42	-0.19
1227/06	Ngaputahi	Growbulk	0.36	0.40	-0.04	-0.09	47.4	-0.41	0.42	-1.58	1.37	-0.01	-0.07	0.00	0.62
569/07	Longview	Perendale	0.31	1.17	-0.86	-0.39	-12.1	-0.01	0.34	-1.68	0.87	-0.03	0.06	-0.29	0.10
2247/04	Rosedale	Growbulk	0.14	-0.15	0.29	0.74	1.1	0.90	-0.28	0.30	0.51	-0.04	0.05	-0.23	0.16
245/04	Tamlet	Coopworth	0.04	-0.63	0.67	1.26	-17.3	-0.43	-0.32	1.22	0.81	-0.06	0.29	0.24	0.48

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

Positive (i.e. higher) values are better for all traits except WormFEC, fat colour, pH and FE eBV where a negative (i.e. lower) value is better.

Rams with no values for NLB do not yet have an two-tooth daughters lambing, and missing FW12 eBV have no progeny yet assessed

TOP 20 DUAL PURPOSE RAMS FOR DUAL PURPOSE INDEXES*

TAG	Flock	Breed	Production (\$)*	Lamb growth (\$)	Adult size (\$)	Meat (\$)	Wool (\$)	Reproduction (\$)	WormFEC (\$)	Facial Eczema (\$)
279/07	Cairnlea	Coopworth	28.00	23.00	-9.12	-1.38	3.29	8.93	-0.66	6.74
134/03	Hinenui	Coopworth	25.12	12.67	-3.88	1.13	0.32	9.44	0.72	-4.30
742/04	Cairnlea	Coopworth	24.03	16.45	-5.79	0.38	3.53	11.12	-3.76	1.43
1617/04	Awareka	Romney	21.71	9.34	-7.51	0.50	1.03	12.05	0.55	1.72
4/06	Corriedale Breeder Group	Corriedale	21.59	12.52	-5.69	0.21	3.18	5.30	-2.20	5.30
5203/04	Marlow	Coopworth	21.03	15.41	-3.34	0.46	3.15	4.66	-0.97	7.59
300/03	MNCC	Coopworth	20.79	9.03	-3.96	1.56	1.94	8.12	0.96	0.00
1560/03	The Gree	Greeline	20.66	12.00	-1.20	1.31	1.03	6.47	1.23	-14.62
245/04	Tamlet	Coopworth	19.98	13.64	-4.63	-1.46	1.97	6.38	0.22	-6.88
278/03	MNCC	Coopworth	19.94	7.03	5.27	-1.80	3.13	5.38	1.10	7.02
1645/07	The Gree	Greeline	19.36	18.75	-6.02	0.45	2.24	2.61	-0.38	6.31
50394/06	Kelso	Kelso	19.02	19.80	-3.85	-2.11	-1.79	7.59	0.20	7.02
412/06	Anui	Romney	18.70	10.75	-4.01	0.31	1.74	3.40	-2.30	1.43
1218/06	Hinenui	Coopworth	17.85	16.13	-8.61	0.66	1.02	8.45	-1.41	-1.72
214/05	TRIGG	Romney	17.64	11.74	-4.65	-0.64	0.30	11.07	-0.46	7.45
301/04	Hazeldale	Perendale	17.42	13.20	-3.92	1.49	0.98	-0.95	-1.90	0.72
480/04	View Hill	Romney	16.99	11.04	-6.54	1.12	1.72	7.73	0.47	2.44
457/00	Nithdale	Romney	16.71	9.76	-0.12	-0.55	1.90	3.64	1.24	-1.29
358/04	MNCC	Coopworth	16.63	14.32	-9.42	-1.39	2.40	4.21	-0.31	2.72
406/06	MNCC	Coopworth	16.11	14.31	-6.57	-0.70	2.86	2.90	0.27	2.87

* These results are the SIL Dual Purpose Production (DPP) index, and the sub-indexes that make up the DPP (www.sil.co.nz). The DPP does not include health traits, so WormFEC and facial eczema are listed as well. All indexes are in dollar values. Maternal traits have only been collected from daughters of dual purpose sires since 2005.

CENTRAL PROGENY TEST ON THE HILL

Do rams that perform well on the flat also perform well on the hill?

This question is frequently asked, and is one which the current B+LNZ Central Progeny Test is not easily able to answer. These so called 'genotype by environment interactions' are known to exist, particularly for some disease-related traits. For example, progeny of a ram with no resistance to facial eczema (FE) may perform very well in an environment where they are not exposed to FE, but are likely to perform poorly if evaluated in an environment where they are exposed to FE. Very little is known about how much other production traits are affected by genotype by environment interactions.

The three Central Progeny Test sites in the Hawkes Bay, Canterbury and Southland are all on relatively flat and low country, and one criticism of the Central Progeny Test programme is that this land class is no longer the type that the majority of sheep are now farmed. Dairy farming and dairy support have taken over much of the easier farming country and therefore a greater proportion of our sheep production now occurs on hill and hard hill country. Farmers commonly believe that rams bred to perform well on the hill will usually perform well on the flat, but that rams bred to perform well on the flat may not perform well on the hill. However, there has not been a lot of research investigating genotype by environment interactions, and certainly none with the current breeds and breed strains used in New Zealand.

Two new hill country Central Progeny Test sites have been established in order to investigate whether the ranking of rams change depending on the environment they are used. The new sites, one in the North Island and one in the South Island, have been established by Ovita using the same dual purpose rams used in the B+LNZ for the 2013 mating. Both farms are commercial properties rather than research stations and will focus on measurement of maternal traits including fertility, ewe and lamb survival and stayability or longevity.

The South Island site is "Onslow View", in the hill country immediately to the north of Millers Flat in Otago. The North Island site is "Koromiko", a Taratahi training farm located north-east of Masterton. Matings are by artificial insemination so that the same dual purpose rams are used on hill and lowland Central Progeny Test sites. DNA parentage testing and RFID tagging are being used to determine parentage for lambs and performance of individual progeny can be measured.

In order to evaluate the maternal performance of a ram, ewe progeny have to be produced and retained until they reach breeding age, and then their performance measured and recorded for a number of years. This means that it will be several years before any significant results are available from the hill country sites for key maternal traits.

Over a meter of snow fell at Onslow view in late June 2013 so that ewe flock has already experienced very challenging conditions.

This is important research for the sheep industry and is expected to receive a lot of interest. The extent to which ratings for genetic merit are applicable across different environments needs to be quantified before we can decide how best to deal with such effects.

Has the eco-efficiency of sheep and beef farms changed in the last 20 years?

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Introduction

In New Zealand and elsewhere, debates on the level of sustainable economic development possible using natural capital stocks rarely considers the eco-efficiency (i.e. the emissions to air or water per unit product) with which natural resources are used. In a recent paper to the New Zealand Grasslands Association the changes in eco-efficiency of sheep and beef farming in New Zealand over the last 20 years were presented and discussed (Mackay *et al.*, 2012). Key messages of that paper are reproduced here.

Approach

Changes in the eco-efficiency of the sheep and beef sector over the last 20 years were calculated for the paper by examining ratios between various inputs (e.g., livestock numbers, nutrients, etc) and outputs (e.g., saleable products, greenhouse gases (GHG), nitrate, etc). Farm modelling was carried out for three periods for each of two MAF farm types: Hard Hill Country-Central North Island (CNI) and Manawatu Easy Hill Finishing. The Overseer[®] nutrient budget model was used to explore the relationship between inputs and outputs from each sheep and beef system. A livestock reconciliation table was constructed from the information provided in each of the Sheep and Beef Farm Monitoring models to calculate the amount of sheep meat, wool and beef produced.

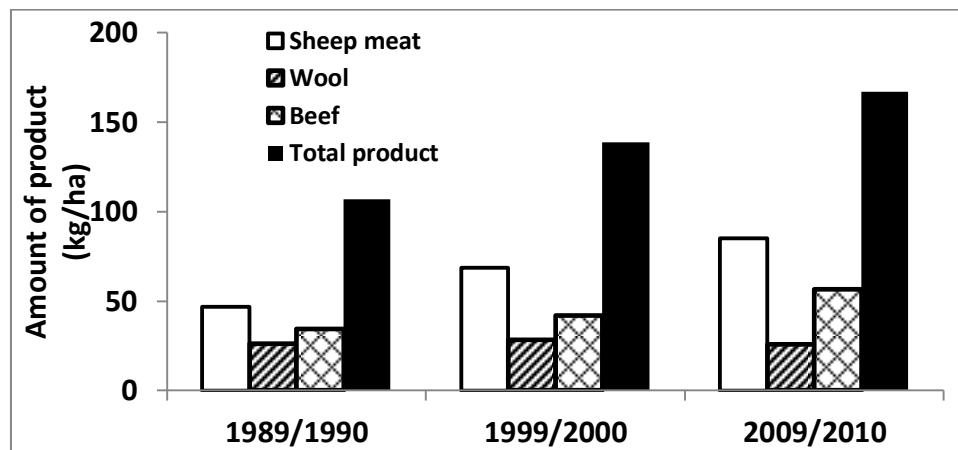


Figure 1: Decadal changes in sheep meat, wool and beef production per hectare from the Hard Hill-Country-Central North Island

Findings

There has been little change in the “nominal stocking rates” in the MAF sheep and beef farm monitoring models in the last 20 years, but substantial changes in livestock performance, with lambing percentages increasing from 75% to 124% in the Hard Hill country-Gisborne sheep and beef farm system and from 93% to 134% on the Easy Hill finishing. In addition to the increased ewe fecundity, improvements have also been achieved in lamb growth rates, and slaughter weights of lambs having increased 37% from 14.5 kg to 19.9 kg over the last 20 years. This has contributed to a lift in sheep meat production in the Hard Hill country of 72% since 1989/90 (Fig.1).

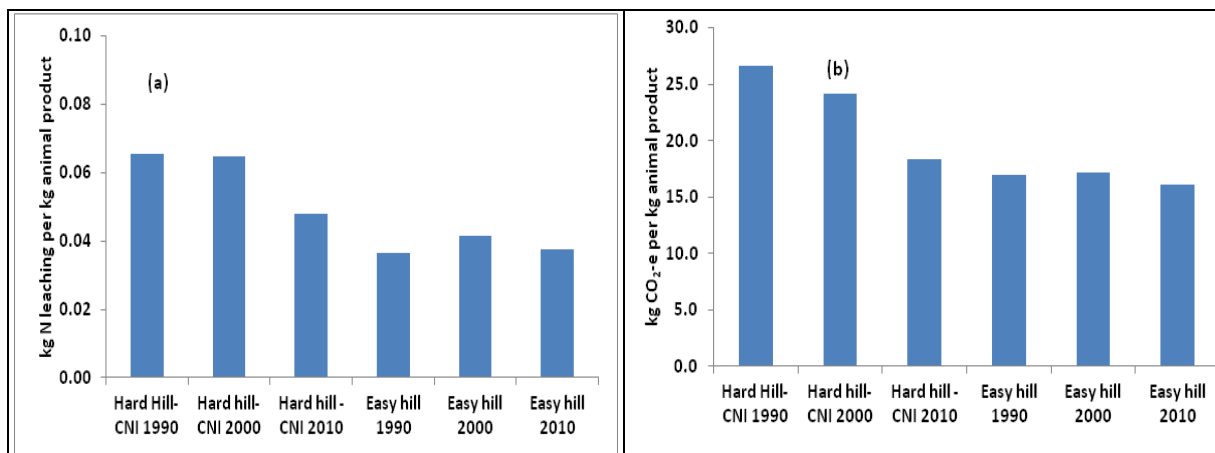


Figure 2 (a) kg N leached and (b) kg CO₂-e per kg animal product (sum of the sheep meat, wool and beef) from sheep and beef farm systems since 1989/90.

Nitrate leaching losses calculated using the Overseer nutrient budgeting model for the sheep and beef systems all fell within a narrow range (7-9 kgN/ha/year). A very similar pattern emerges with GHG emissions, with little change in GHG emissions from the sheep and beef systems over time or across the farm systems.

While meat and fibre production per hectare increased, the amount of N leached per kg animal product (Fig. 2a) and CO₂-e per kg animal product (Fig. 2b) decreased from 1989 to 2000 and again between 2000 and 2010 for the Hard Hill country-CNI sheep and beef operation.

The decrease in the kilogram N leached per kilogram of meat and fibre produced reflects two factors. Firstly, more of the feed grown through the spring and summer is eaten by young growing animals that can be turned into saleable product before the autumn and winter months. Second, less live weight per unit product sold is carried into winter reducing the number of urine patches and the potential for N losses by leaching. The reduction in the kg CO₂-e per kg animal product reflects in part on the increased allocation of the total feed grown to saleable product and less to the maintenance of capital livestock.

The eco-efficiency gains obtained in the Hard Hill country-CNI farm system did not extend to include an overall reduction in N leaching or GHG emissions per hectare. This is an important point to note if there are limits being set on emissions to water in catchments. In those circumstances the absolute losses per hectare are a more meaningful measure than the use of a loss per kilogram product. While there was not an overall reduction in N leaching or GHG emissions per hectare, they have changed little since 1990.

In the Easy Hill finishing system there have been only small changes in the eco-efficiency over the last 20 years (Fig. 2), but again on the positive side little change in environmental footprint. The Easy Hill finishing system is more eco-efficient with the amount of saleable product per hectare higher and the N leached and GHG emissions per kilogram of saleable product lower than the hard hill country operation (Fig. 2).

The focus of the sheep industry on reproductive performance and higher growth rates in lambs and cattle provides a natural buffer to the increases in emissions generally associated with intensification of a livestock system. Understanding how eco-efficiency changes is more than just an academic exercise as we move to an operating environment where land is a finite resource and there are limits on emissions to the environment.

Reference

Mackay, A.D., Rhodes, A.P., Power, I., Wedderburn, M.E. 2012. Has the eco-efficiency of sheep and beef farms changed in the last 20 years? *Proceedings of the New Zealand Grassland Association*: 74 9-14

ANIMAL MANAGEMENT PROCEDURES

To date, a total of 260 sires from 22 terminal and 12 dual purpose breeds or composites have been evaluated in the B+LNZ Central Progeny Test (formerly the M&WNZ Central Progeny Test, and before that 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. 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 all ewe progeny are mated as a minimum as two-tooths and four-tooths (i.e. there is no culling prior to the four-tooth lambing). Number of lambs born and lamb survival are recorded at each lambing. Data from additional matings are recorded if the ewe progeny are retained in the flock, but they can be culled after the four-tooth lambing.

Timetable of events for key dates at the three Central Progeny Test sites for 2012/2013

Event	Poukawa	Ashley Dene	Woodlands
Start of mating	2 March	28 March	10 April
Start of lambing	28 July	19 August	3 September
Docking	At birth	8 September	29 September
Weaning	11 November	3 December	10 December
First draft	22 November	5 December	12 December
Second draft	1 February	16 January	23 January
Third draft	19 March	13 February	28 February

FUTURE OF THE CENTRAL PROGENY TEST

This year promises to be exciting for Beef + Lamb New Zealand. A new partnership application has been submitted to the Ministry of Business, Innovation and Employment for a project plan that will encompass the Beef + Lamb New Zealand Central Progeny Test, Sheep Improvement Ltd and Ovita. The idea behind combining the three entities is to create a genetics hub for sheep and beef. Keep an eye on our websites for information updates about this partnership programme.

Part of the project programme is to expand the current Central Progeny Test to include measurements on sire progeny run on harder hill country (please see Page 15 for an article on “Central Progeny Test on the Hill”). As part of the Ovita project plan for this year, two new harder hill country sites linked to the B+LNZ Central Progeny Test were established on commercial properties, one near Millers Flat in Otago, and the other on one of the Taratahi Agricultural Training Institute farms near Masterton. The aims for the ‘expanded’ Central Progeny Test are to investigate whether sires rank differently for performance in lowland and hill environments, and to collect data on maternal ewe performance in harder country.

We want to hear your ideas as well. What do you think are priorities for sheep genetics work, or other aspects of sheep production in New Zealand? It may be that these could be incorporated into future plans or become add-on projects for the Central Progeny Test. Please take the opportunity to contact us about this using the contact details below.

Sire entry into the Central Progeny Test

A call is made for expressions of interest to supply rams to the Central Progeny Test every November. All SIL flocks actively recording performance in New Zealand receive notification of this. Individual ram selection is left to the breeder(s), but spaces 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
- availability of meat yield performance information (e.g. ultrasonic eye muscle measurements) for the individual ram and his relatives in SIL recorded flocks

Alternatively, rams can be entered into the Central Progeny Test on a cost-recovery basis: \$5,000 per terminal sire and \$15,000 per dual purpose sire. These prices may be revised in future.

Additional traits

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

Add-on projects

To date the unique genetic resources of the Central Progeny Test have been used for more than 20 add-on projects. These projects will continue to be an important contribution from the Central Progeny Test to advances in the sheep industry.

Genetic connectedness between breeding groups

Permission has been given to several breeding groups to use Central Progeny Test data to improve genetic connections between flocks in their groups. Any group wishing to use the CPT data in this way should get their SIL Across Flock Report Manager to apply to SIL for access to CPT flock data for this purpose (contact details below).

To provide comment, to get further information including the source of individual rams, or to have results presented at a farmer meeting, contact Dr Mark Young by telephone (03 357 0694) or email (mark.young@beeflambnz.com).

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