Elders Victoria Sire Evaluation Group

2003 Drop 1ˢᵗ Evaluation of Progeny at 11 months

11 Months Wool Growth

Conducted by:
The Elders Victoria Sire Evaluation Group
under the auspices of the
Victorian Stud Merino Sheepbreeders'
Association
& Balmoral P & A Society

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The information in this booklet should not be read in isolation – 2003 drop progeny at the time of their assessment were 11 months of age and shorn with 11 months wool growth. This is the first assessment of the 2003 progeny in the Central Test Evaluation trials and results from this assessment will be reported in *Merino Superior Sires*. A second assessment of these progeny will be undertaken in 2005.

CONDUCT OF SIRE EVALUATION SCHEMES

This evaluation is an accredited sire evaluation program run under the guidelines of the Australian Merino Sire Evaluation Association (AMSEA). The established guidelines have been followed to enable an accurate and fair comparison of the Merino rams entered allowing the results to be published in the Merino Superior Sires report.

Elders Victoria Sire Evaluation Group - Balmoral

The Elders Victoria Sire Evaluation Trials aim to evaluate and promote leading sires suited to fine wool production in Western Victoria.

This goal is achieved by informing participants, their clients and interested woolgrowers on events surrounding the trials and in addition to this; produce and distribute annual reports and periodic newsletters. To further promote the evaluation, displays of progeny, data and their fleeces have been on show at the Australian Sheep & Wool Show (1998-2003), Balmoral and Horsham Shows and Hamilton Sheepvention. Participating studs have also provided static displays for viewing during field days. Since April 2000 successful annual Open Days have been held at 'The Mountain Dam', 'Kerrsville' and 'Gringegalgona' to inspect progeny and to discuss the sire evaluation program with interested woolgrowers.

Prior to 1998, there were three previous trials in the Balmoral/Hamilton district, which are recorded in Merino Superior Sires as B95, HT93, HT94. In 1998 a small group of stud breeders met to form what is now known as the Elders Victoria Sire Evaluation Group. The Sire Evaluation Trials commenced in 1998 and there are now 7 progeny drops – 1998, 1999, 2000, 2001, 2002, 2003 & 2004. All trials are run for a minimum of 2 years.

- 1998 & 1999 drop – Host property 'The Mountain Dam', Balmoral
- 2000 & 2002 drop - Host property 'Kerrsville', situated between Balmoral and Coleraine
- 2002 & 2003 drop – Host property 'Gringegalgona' at Balmoral.
- 2004 & 2005 drop – Host property 'Arundale' at Balmoral

The 1998 drop wethers continued to be assessed for the further 2 years (a total of 4 assessments) outside the Central Test Evaluation program as part of a PIRD (Producer Initiated Research Development) Program which determined that mature age assessments averaged across each sire group provide similar information to the two-year trial data and in particular show clear trends and confidence with the second year assessment information.

Planning and direction is developed by the Sire Evaluation Group Management Committee.

The Management Committee:

Robert Plush	(Chairman)	03 5575 0208	plush1@ansonic.com.au
Robert Close		03 5570 4238	kurrawirra@ansonic.com.au
Tom Silcock		03 5388 2238	silcock@netconnect.com.au
Stephen Silcock		03 5574 3202	sjsilcock@bigpond.com
Sue & Hugh Jarvis		03 5574 3298	aramis@datafast.net.au
David Whyte		03 5572 2266	dwhyte@elders.com.au
Colin & Jill Frawley		03 5578 6334	wirra@ansonic.com.au
Angela Byron	(Manager)	03 5570 0590	manager@balmoralbreeders.com.au

Host Property for 2003 drop progeny

The Gringegalgona property, run by Stephen and Judith Silcock, is located in the Dundas Highlands. It lies on shallow clay and sandy loams in undulating tableland red gum country midway between Cavendish and Balmoral, 48kms northwest of Hamilton. The average annual rainfall at Gringegalgona is 675mm (27"). Progeny are managed under strict commercial conditions.

UNDERSTANDING THE RESULTS

TABLES

Sire Identity: Identity of breeder and the sire's number and/or name and code number located on some tables and graphs.

No. of Progeny: Number of progeny assessed at time of event

Estimated Progeny Values: Estimated progeny values (EPVs) express the expected performance of progeny of a sire relative to another sire in the evaluation when mated to a random allocation of ewes. EPVs are used to describe the performance of the major measured traits (see information on accuracy over page). They are expressed as deviations (dev) from the average of sires in the evaluation. Fibre Diameter, Yield, Coefficient of Variation of Fibre Diameter, Staple Strength and Staple Length EPVs are presented as deviations from the average, expressed in the same units as they were measured. Greasy and Clean Fleece Weights and Body Weights are percentages – 0% equals average and, for example, 10.0 is 10% above average performance of the group.

Measured traits:

GFW%   Greasy Fleece Weight (percentage)
CFW%   Clean Fleece Weight (percentage)
FD µm   Average Fibre diameter (micron)
BWT%   Body Weight (percentage)
CV%   Co-efficient of variation of fibre diameter
Yld%   Washing yield of the midside sample
StpL   Staple Length (mm)
StpSt   Staple Strength (N/ktex)

Sire Least Square Means: Sire least square means are the average performance of all the progeny assessed, but corrected for the number of progeny, sex and birth type.

Visual Traits:
Conformation   **All scored 1-5, with '1' being best and '5' being worst. Many animals were scored '3', being neither bad nor outstandingly good.**
Face – Scored 1 to 5. Scores of 2,3,or 4 are most acceptable; scores of 1 or 5 (bare or muffled) are less acceptable.
Shoulders/back – Reported as percentage of the progeny with a negative expression.
Feet/legs – Scored 1 – 5. (1 being best)
Neck/body development – Scored 1 – 5. Scores of 2, 3 or 4 are most acceptable, scores of 1 or 5 are less acceptable (too heavy or too plain).
Mouth/Jaw – Reported as percentage of progeny with a negative expression.

Wool Quality   **Wool Colour** – Scored 1 to 5. (1 being best)
Wool Character – Scored 1 to 5 (1 being best)
Dust penetration/staple weathering - Scored 1 to 5, where '1' is best.
Fleece Rot – Scored 0 to 5, '0' is no fleece rot, '1' slight fleece rot, '5' is extreme.

Pigmentation   **Black Lambs** are the result of a black recessive gene being present in both the sire and the dam (both sire and dam being Bb, or heterozygous). There is a 25% chance that the progeny of the Bb x Bb mating will be a 'black lamb' (bb). That any 'black lambs' resulted from a sire confirms that the sire carries the black recessive gene. When a sire does not produce any 'black lambs' is no guarantee that it does not carry the black recessive gene, as it requires the ewes he is mated to be carriers for this 25% chance of expression to occur.

Skin Pigmentation: significant degree of pigmented skin on <u>non</u> wool growing areas. (typically smutty nose/brown rimmed eyes), reported as percentage of progeny with skin pigmentation
Wool Pigmentation: pigmented wool in random spots <u>or</u> isolated pigment <u>or</u> pigmented birthcoat, halo-hair, <u>or</u> pigmented leg hair <u>or</u> black lamb, noted at tagging, visual classing or shearing and shown as a percentage of progeny with wool pigmentation.

Index Options:	Breeding Objective index options provide the relative value of sires based on a combination of the measured traits. It should be noted that these are only some of the many indexes that can be used to describe an individual breeder's objective for measured traits. If a breeder uses a sire, the relative performance of the flock must be considered to establish the change that can be expected.
	The RAMPOWER standard indexes – 3%, 6% and 12% Micron Premium (MP) – have been endorsed by Central Test Sire Evaluation as the base indexes for sites to provide combined measured trait results.
	3% MP Index: Maintain fibre diameter (FD) while maximising the increase in Clean Fleece Weight (CFW), maintaining body weight (BWT) and CV of fibre diameter.
	6% MP Index: A moderate level of downward pressure on FD, while maintaining a high level of increase in CFW, maintaining BWT and improving CV of FD.
	12% MP Index: A high level of downward pressure on FD, while obtaining a small increase in CFW, maintaining BWT and improving CV of FD.
Classer's Grade:	In the 2000 drop Assessment the Committee changed to one Classer to grade all assessed progeny as Tops, Flocks or Culls, based on visual assessment of all traits. The percentage of Tops, Flocks and Culls is presented. This change is in line with changes to Sire Evaluation requirements.
Progeny Group Classing:	Assessment of the evenness of sire progeny groups is carried out as a separate assessment to individual classing and is conducted in the 2nd year of assessment.

SUMMARY GRAPHS

Performance distribution graphs provide a summary of performance of sires for two traits such as Fleece Weight and Fibre Diameter. Use the labels on the graph to obtain a general idea of the performance of sires in that area of the graph, e.g. High Fleece Weight/Low Fibre Diameter. (See Figure 2)

ACCURACY OF ESTIMATED PROGENY VALUE

Estimated Progeny Values (EPVs) express the expected performance of progeny of a sure relative to performance of progeny of another sire in the evaluation when mated to the same standard of ewes.

EPVs are a more accurate indicator of a sire's relative genetic merit than simple sire averages as they take into account:
- how much of the superiority is actually due to the sire's genes and can be passed on to its progeny;
- the number of progeny a sire has in the analysis;
- the measurements of other related traits.
- non-genetic effects such as whether animals are born as singles or twins.

The 'true' Progeny Value of a sire would be obtained if the number of progeny evaluated for each sire was infinite. Because the number of progeny for each sire in the evaluation is not infinite, performance shown in this report is described as *Estimated* Progeny Values.
The correlation (similarity) between the *Estimated* Progeny Value and the *True* Progeny Value increases as
i)   the number of progeny is increased, and
ii)   the heritability of the trait is greater.
If the number of progeny were infinite the correlation between the *Estimated* and *True* Progeny Value would be perfect (described as 100%). For a highly heritable trait (0.5) such as fibre diameter, the correlation between *Estimated* and *True* Progeny Value improves rapidly from 0.0% with no progeny to 77% with 10 progeny. The rate of improvement in correlation slows from 86% with 20 progeny, to 90% with 30 progeny and 92% with 40 progeny. Traits with lower heritabilities require more progeny to reach the same level of accuracy. For more detail, see table on Accuracy in the Appendix.

ALLOWANCE FOR TWINS/TRIPLETS

Visual Assessment:
No allowance was made in the visual assessment for multiple births.

Objective Analysis:
An allowance was made by CTSE analysis program for twins and triplets when analysing measurement data for the following traits – GFW%, Yield%, CFW%, BWT%, FD and CV of FD.

LINKING CENTRAL TEST DATA USING LOCAL SITES

Link sires provide the "link" between other local sites and are used in combined Central Test Sire Evaluation reports to report across sites and across years. These "link sires" are a vital component of the Central Test Sire Evaluation. To become a "link sire", the ram must have participated in evaluation of their progeny across more than one site. Each year the publication *Merino Superior Sires* is produced which reports the combined analysis of rams participating across all Australian Local Sites.

The information in this booklet therefore should not be read in isolation. These progeny are now reported in this document for their first assessment in 2004. These progeny will have a second and final assessment in 2005.

CHANGES TO THE CENTRAL TEST GROUP

In 2000 the Central Test Sire Evaluation Committee run under the auspices of the Australian Association of Stud Merino Breeders voted to become an independent group and is now known as the Australian Merino Sire Evaluation Association (AMSEA). Updated CTSE accreditation requirements were adopted in April 2000 and continue to be modified by AMSEA as a gradual improvement program for the most accurate data collection and analysis.

The Victorian Stud Merino Sheepbreeders' Association continues to support Victorian Sire Evaluation Trials and the Elders Victoria Sire Evaluation Trial is conducted under the auspices of both the Victorian Stud Merino Sheepbreeders' Association and the Balmoral Pastoral and Agricultural Society.

PARTICIPANTS IN THE 2003 TRIAL

SIRE & OWNER DETAILS

Stud Sire Identity	Contact Name, Address, Phone & Fax No. & Email
Bindawarra (Richard) 471 * 5038921997000471	Murray & Janet Toland, PO Box 131, Omeo 3898 Ph. 03 5159 1362, Fax 03 5159 1361
Cromarty (Dean) BLK953 5047772000000953	Cath & Huntly Gordon, Ben Lomond NSW 2365 Ph. 02 6733 2103, Fax 02 6733 2114 Email: cath@northnet.com.au
Goodwood BW1143/01 5038922001001143	Richard Alexander, Banula P/L, Pattisons Lane, Glenthompson Vic 3293 Ph. 03 5577 8265 (Note: Bindawarra sire)
Gringegalgona 04A0907/01 5030972001011139	Stephen Silcock, Gringegalgona Stud Partnership, RMB 365, Balmoral 3407 Ph. 03 5574 3202, Fax 03 5574 3239 Email: sjsilcock@bigpond.com
Hazeldean 99-12586 5003831999012586	Jim Litchfield, Hazeldean Pty. Ltd., Cooma 2630 Ph. 02 6453 5555, Fax 02 6453 5526 Email: litchfield@hazeldean.com.au
Kerrsville NC0541 * 5035092000NC0541	Robert Plush, RMB 8203, Coleraine 3315 Ph/Fax 03 5575 0208 Email: plush1@ansonic.com.au
Kurra-Wirra SR980 50417320000SR980	Robert Close, Kurra-Wirra, RMB 9333, Coleraine 3315 Ph. 03 5570 4238, Fax 03 5570 4234 Email: kurrawirra@ansonic.com.au
Merinotech 99.431 5046481999990431	Hugh & Susan Jarvis, "Aramis", RMB 395, Balmoral Vic 3407 Ph. 03 5574 3298, Fax 03 5574 3299, Email: aramis@datafast.net.au
Nerstane 990137 5032981999990137	John McLaren, Nerstane Merino Stud, Woolbrook NSW 2354 Ph 02 6777 5881, Fax 02 6777 5922 Email: nerstane@northnet.com.au
Ranken BK485 5091002000000485	JP & SM Ranken, RMB 1205, Morrisons Vic 3334 Ph. 03 5341 5681, Fax 03 5341 5681
Spielvogel W83/01 6091012001000083	T & M Spielvogel, 10 Creamery Road, Meredith Vic 3333 Ph. 03 5286 1450
Suttor BLK32 504126200000BLK032	Shelley Roydhouse, "Echo", Triamble via Mudgee NSW 2850 Ph. 02 6373 8597, Fax 02 6373 8597
The Mountain Dam NL112 50457219990NL112	Tom Silcock, T & A Silcock, RMB 8401, Horsham 3401 Ph. 03 5388 2238, Fax 03 5388 2235 Email: silcock@netconnect.com.au
Toland Poll LB99/01 601082200101LB99	Philip Toland, PC & G Toland, Feltrim Road, RMB 2005, Violet Town 3669 Ph. 03 5798 1605, Fax 03 5798 1404, Email: toland@origin.net.au

Comment [AB1]: Needs changing to 2003 drop sires, file attached with sire codes.

*   Link Sires — these sires provide the "link" between other accredited Sire Evaluation Sites and Years and have participated in evaluation of their progeny across more than one site.

MANAGEMENT REPORT – 2003 Drop Progeny

Ewe Base:

Ewes for the 2003 trial were selected from "Gringegalgona" mixed aged commercial, fine wool Merino breeding ewes. The average adult flock micron at "Gringegalgona" over the last 10 years is 19.2.

2003 Progeny Location:

The Gringegalgona property, run by Stephen and Judith Silcock is located in the Dundas Highlands. It lies on shallow clay and sandy loams in undulating tableland red gum country midway between Cavendish and Balmoral, 48kms north west of Hamilton. The average annual rainfall at Gringegalgona is 675mm (27"). Progeny are managed under strict commercial conditions.

Stock Management/Seasonal Conditions

The spring of 2003 saw a return to a normal season with above average rainfall of 690 mm recorded for the year; the average rainfall is 650 mm at 'Whiteoaks'.

The 2003 drop lambs were born commencing 1st September and were mulesed, marked and vaccinated early October. In late November they were weaned and received their second vaccination, first summer drench and were 'Clicked'. They were away to a good start after being imprint fed while on the ewes and continued with a small ration of grain being progressively increased to match their needs. The lambs were stocked at 18 lambs per hectare and fed 2kg of oats and approx. 3kg of silage per head per week. These lambs were crutched mid February and received their second summer drench at this time.

Lambs were then supplementary fed through until the middle of May. Rainfall for April was 9mm, May 63mm and June 155mm. This is the wettest June on record for us for more than 50 years. The 2003 drop progeny were drenched on 23rd June and classed on 25th June, 2004. Shearing took place on 20th July after inclement weather caused delays. Due to several attempts to shear these sheep, body weights were down when taken on 11th August. Sheep were drenched on 3rd September and are now performing well with a good spring in front of them.

The season was very wet through winter with very little pasture growth - a total of 494mm rain to 28th September, 2004.

The Evaluation & Management Program 2003 drop progeny:

14th March2003	Commenced AI program - Ewes sponged & teasers injected.
28th March 2003	Laparoscopic insemination of 860 ewes, conducted by Genstock
Mid May 2003	Ultrasound/scan ewes by Mark Jenkinson
Early July 2003	Ewes drafted into groups of singles & twins
Mid July 2003	Ewes drafted into 28 groups for lambing
1st September, 2003	Ewes commenced lambing
15th September 2003	Lambing complete
	Lambs tagged & scored
Early October 2003	Marked & mulesed lambs, vaccinated
Late November 2003	Weaned lambs, 2nd vaccination, 1st summer drench and 'Clicked'
17th December 2003	Lambs body weighed (weaning weight)
December 2003	Supplementary feeding (imprint feeding while on ewes)
Mid February 2004	Lambs crutched, received 2nd summer drench
26th March 2004	Progeny on display at Open Day
23rd June 2004	Drench
25th June 2004	1st Visual classing of progeny
20th July, 2004	1st shearing (11months wool)
11th August 2004	Body weighing (yearling weight)
3rd September 2004	Drenched

Classer for 2003 Drop Progeny: Mr Malcolm Nicholls, Elders

Summary graph using the 6% Breeding Objective Index Option has been used to combine Measured Traits and classers Tops &
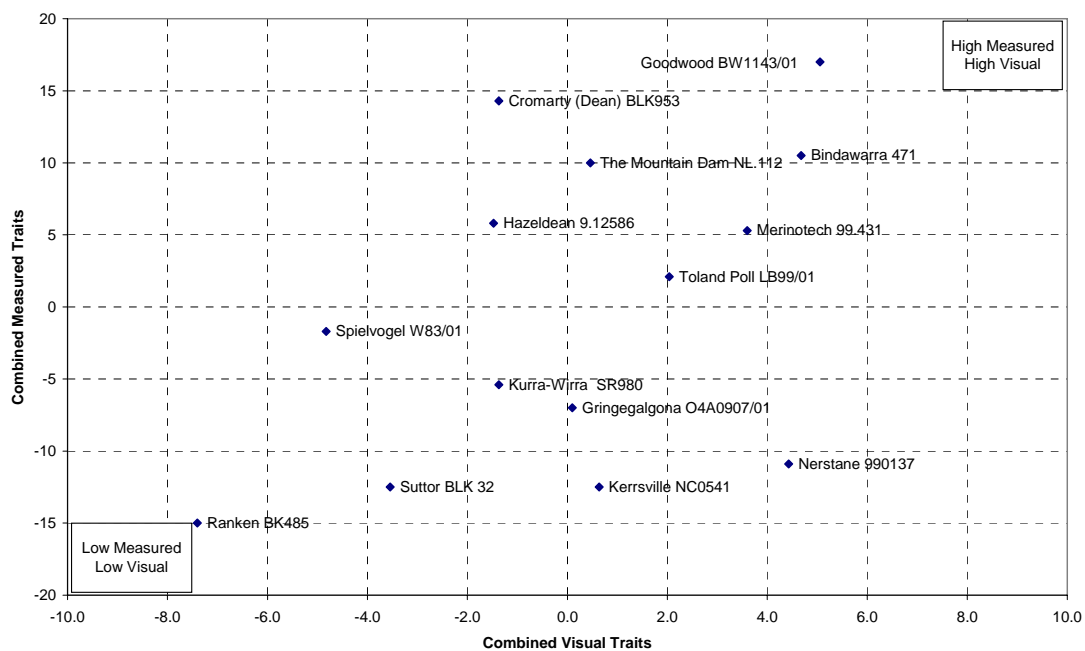
Culls has been used to combine Visual Traits.

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The RAMPOWER standard indexes:

3% Index MP: Maintain FD while maximising the increase in CFW, maintaining BWT and CV of FD.

6% Index MP: A moderate level of downward pressure on FD, while maintaining a high level of increase in CFW, maintaining BWT and improving CV of FD.

12% Index MP: A high level of downward pressure on FD, while obtaining a small increase in CFW, maintaining BWT and improving CV of FD.

Sire Identity	No of progeny	RAMPOWER Standard Index Options			Classer's Grade %		
		3% MP	6% MP	12% MP	Tops %	Flocks %	Culls %
Bindawarra (Richard) 471 *	42	114	111	106	37	53	9
Cromarty (Dean) BLK953	43	106	114	119	23	51	26
Goodwood BW1143/01	47	116	117	118	43	45	13
Gringegalgona O4A0907/01	40	94	93	90	20	65	15
Hazeldean 9.12586	35	109	106	97	26	46	29
Kerrsville NC0541 *	39	89	88	91	18	72	10
Kurra-Wirra SR980	43	86	95	104	14	70	16
Merinotech 99.431	40	109	105	99	30	63	8
Nerstane 990137	45	91	89	90	33	60	7
Ranken BK485	40	82	85	93	5	58	38
Spielvogel W83/01	51	89	98	105	14	53	33
Suttor BLK 32	53	97	88	84	9	68	23
The Mountain Dam NL.112	44	112	110	105	23	61	16
Toland Poll LB99/01	34	106	102	99	26	62	12
Average	43	100	100	100	23	59	18

* **Link Sires** — these sires provide the "link" between other accredited Sire Evaluation Sites and Years and have participated in evaluation of their progeny across more than one site.

Classer's Assessment is expressed as a percentage of a sire's progeny.

Figure 2 - Summary Graph Fleece Weight/Fibre Diameter
## 2003 drop - 1st Evaluation
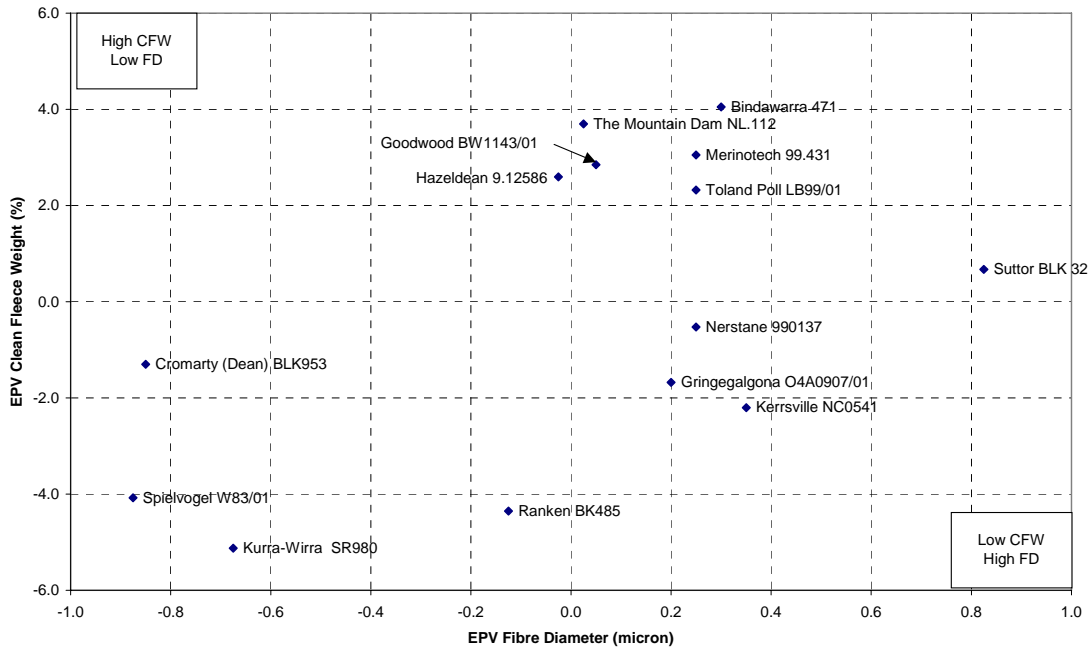
Table 1. Major Measured Traits – Estimated Progeny Values and Classer's Grade %

Sire Identity	No of progeny	Estimated Progeny Values				Classer's Grade %		
		GFW %	CFW %	FD µm	BWT %	Tops %	Flocks %	Culls %
Bindawarra 471	42	3.3	4.1	0.3	0.6	37	53	9
Cromarty (Dean) BLK953	43	-2.0	-1.3	-0.9	0.1	23	51	26
Goodwood BW1143/01	47	1.5	2.9	0.1	-1.1	43	45	13
Gringegalgona O4A0907/01	40	-0.2	-1.7	0.2	1.1	20	65	15
Hazeldean 9.12586	35	3.2	2.6	0.0	-0.8	26	46	29
Kerrsville NC0541	39	-3.0	-2.2	0.4	-1.8	18	72	10
Kurra-Wirra SR980	43	-5.7	-5.1	-0.7	4.1	14	70	16
Merinotech 99.431	40	3.7	3.1	0.3	6.2	30	63	8
Nerstane 990137	45	1.0	-0.5	0.3	-2.8	33	60	7
Ranken BK485	40	-5.2	-4.4	-0.1	2.0	5	58	38
Spielvogel W83/01	51	-2.9	-4.1	-0.9	-4.5	14	53	33
Suttor BLK 32	53	-1.9	0.7	0.8	-1.9	9	68	23
The Mountain Dam NL.112	44	5.5	3.7	0.0	-3.6	23	61	16
Toland Poll LB99/01	34	2.7	2.3	0.3	2.3	26	62	12
Average	43	2.9 kg	2.0 kg	15.4 µm	26.7 kg	23	59	18

Table 2. Other Measured Traits – Estimated Progeny Values

| Sire Identity	No of progeny	Estimated Progeny Values			
		CV %	YLD %	Staple Strength (N/ktex)	Staple Length (mm)
Bindawarra 471	42	-0.8	0.9	1.4	5.7
Cromarty (Dean) BLK953	43	0.3	1.7	-0.2	-3.9
Goodwood BW1143/01	47	-1.6	1.9	4.0	2.1
Gringegalgona O4A0907/01	40	-0.1	-0.2	-3.9	0.4
Hazeldean 9.12586	35	1.0	0.0	-4.7	3.9
Kerrsville NC0541	39	-0.5	0.9	2.7	-3.2
Kurra-Wirra SR980	43	0.4	0.2	0.5	-4.7
Merinotech 99.431	40	0.0	-1.4	-1.4	4.1
Nerstane 990137	45	-0.1	-2.1	0.1	0.4
Ranken BK485	40	0.3	-0.6	2.5	-4.6
Spielvogel W83/01	51	0.9	-0.6	-3.0	-3.3
Suttor BLK 32	53	0.1	2.1	2.6	-0.4
The Mountain Dam NL.112	44	-0.1	-1.9	-0.9	2.2
Toland Poll LB99/01	34	0.1	-1.0	0.4	1.3
Average	43	21.4 %	71.0 %	23.7 N/ktex	72.2 mm
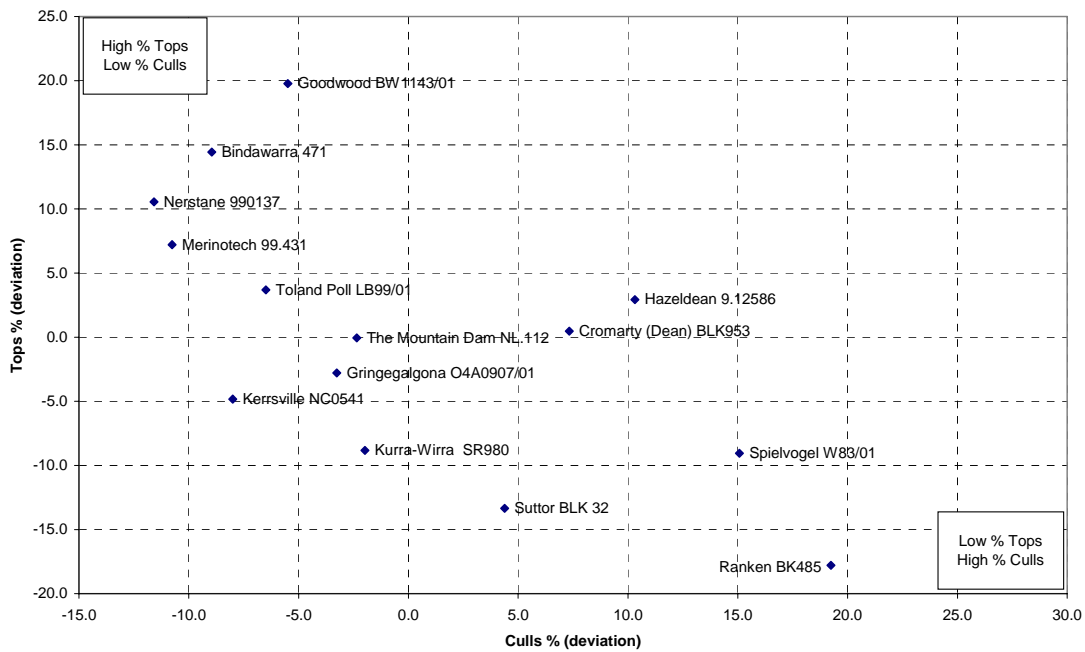
Figure 3 - **Summary Graph Classer's Grades – 2003 drop -
1st Evaluation**

Table 3a. Other Measured Traits – Sire Least Square Means*

Sire Identity	No of progeny	Spin. F.	Std. Dev.	Curv.	ComfortFactor
Bindawarra 471	42	15.1	3.1	81.7	99.9
Cromarty (Dean) BLK953	43	14.5	3.2	88.0	99.9
Goodwood BW1143/01	47	14.8	3.0	85.5	100.0
Gringegalgona O4A0907/01	40	15.4	3.4	87.2	99.9
Hazeldean 9.12586	35	15.3	3.5	82.5	99.9
Kerrsville NC0541	39	15.4	3.3	89.6	99.9
Kurra-Wirra SR980	43	14.7	3.3	93.3	99.9
Merinotech 99.431	40	15.4	3.4	85.3	99.9
Nerstane 990137	45	15.2	3.3	85.7	99.8
Ranken BK485	40	15.1	3.4	90.1	99.9
Spielvogel W83/01	51	14.6	3.3	92.5	99.9
Suttor BLK 32	53	15.8	3.5	86.8	99.8
The Mountain Dam NL.112	44	15.0	3.3	86.6	99.9
Toland Poll LB99/01	34	15.3	3.4	84.2	99.9
Average	43	15.1 µm	3.3 µm	87.3 deg / mm	99.9 %

* Least Square Means – corrected for number of progeny, sex and birth type

Table 3b. Measured Traits[1] – Sire Least Square Means*

Sire Identity	No of progeny	GFW	CFW	FD	BWT	CV	YLD	StpSt	StpL
Bindawarra 471	42	3.2	2.3	15.6	27.0	20.1	71.8	25.0	79.3
Cromarty (Dean) BLK953	43	2.8	2.0	14.8	26.6	21.7	72.8	23.0	67.5
Goodwood BW1143/01	47	2.9	2.1	15.4	26.3	19.3	72.9	26.6	74.7
Gringegalgona O4A0907/01	40	2.8	2.0	15.8	27.1	21.2	70.7	19.6	73.0
Hazeldean 9.12586	35	3.0	2.1	15.5	26.5	22.6	71.0	19.4	76.7
Kerrsville NC0541	39	2.7	2.0	15.8	26.1	20.8	71.9	25.8	69.0
Kurra-Wirra SR980	43	2.8	2.0	14.9	28.2	22.2	71.2	24.0	66.6
Merinotech 99.431	40	3.2	2.2	15.7	29.5	21.5	69.5	22.8	77.8
Nerstane 990137	45	2.9	2.0	15.5	25.6	21.3	68.8	24.1	72.6
Ranken BK485	40	2.8	2.0	15.4	27.5	22.3	70.4	25.4	67.3
Spielvogel W83/01	51	2.7	1.9	14.7	25.0	22.8	70.4	20.6	67.9
Suttor BLK 32	53	2.7	2.0	16.2	26.1	21.8	73.0	25.6	72.0
The Mountain Dam NL.112	44	3.0	2.1	15.4	25.5	21.2	69.1	23.0	74.6
Toland Poll LB99/01	34	3.1	2.1	15.6	28.1	21.5	69.9	24.6	74.2
Average	43	2.9 kg	2.0 kg	15.4 µm	26.7 kg	21.4 %	71.0 %	23.7 N/ktex	72.2 mm

[1] Measured traits presented as EPVs in Tables1 and 2
* Least Square Means – corrected for number of progeny, sex and birth type

A sire's average score and the percentage of a sire's progeny for each score are reported.

Table 4a. Scored Wool Quality Traits

| | Colour | | | | | | Character | | | | | | Staple Weathering | | | | | | Fleece Rot | | | | | | |
| | best | | | | worst | | best | | | | worst | | best | | | | worst | | best | | | | | worst | |
Sire Identity	Avg	1	2	3	4	5	Avg	1	2	3	4	5	Avg	1	2	3	4	5	Avg	0	1	2	3	4	5
Bindawarra 471	1.8	26	67	7			2.2	29	38	24	7	2	1.3	71	24	5			0.9	40	45	7	2	2	2
Cromarty (Dean) BLK953	1.6	47	51	2			2.0	28	44	26	2		1.6	58	26	16			1.0	33	47	16	2	2	
Goodwood BW1143/01	1.7	36	53	11			2.0	30	45	23	2		1.5	66	17	17			0.7	50	39	7	4		
Gringegalgona O4A0907/01	1.8	33	63	3	3		2.2	15	58	18	10		1.7	58	23	15	5		1.0	41	33	15	8		3
Hazeldean 9.12586	1.9	14	77	9			2.4	23	31	29	14	3	1.8	43	40	14	3		1.0	43	31	11	11		3
Kerrsville NC0541	1.6	51	41	8			2.4	8	44	49			1.4	64	31	5			0.8	39	42	18			
Kurra-Wirra SR980	1.8	35	51	14			2.4	9	51	28	9	2	1.4	70	19	12			1.1	37	33	21	5	2	2
Merinotech 99.431	2.1	5	83	10	3		2.9	5	20	53	23		1.5	58	33	10			1.3	28	40	20	8		5
Nerstane 990137	1.8	27	67	7			1.7	44	44	11			1.5	69	18	11	2		0.8	42	40	16	2		
Ranken BK485	2.1	13	70	18			2.8	5	20	65	10		2.0	33	33	35			1.4	28	38	15	8	10	3
Spielvogel W83/01	2.0	25	57	14	4		2.4	20	33	31	16		1.7	51	31	18			1.2	43	29	10	8	6	4
Suttor BLK 32	1.5	49	51				2.7	6	34	49	11		1.8	36	49	13	2		0.4	64	34		2		
The Mountain Dam NL.112	1.7	36	59	5			2.2	18	45	32	5		1.6	61	20	16	2		0.8	41	41	11	7		
Toland Poll LB99/01	1.9	24	65	12			2.1	26	41	32			1.6	59	18	24			1.4	36	18	24	18		3
Average	1.8	31	60	8	1		2.3	19	39	33	8	1	1.6	57	27	15	1		1.0	41	37	13	6	2	2

Table 4b. Scored Conformation Traits

| | Face | | | | | | Neck / Body Development | | | | | | Feet / Legs | | | | | | Jaw | Back / Shoulder |
| | | * | | acceptable | | * | | * | | acceptable | | * | | best | | | | worst | | |
Sire Identity	Avg	1	2	3	4	5	Avg	1	2	3	4	5	Avg	1	2	3	4	5	Neg[1]	Neg[1]
Bindawarra 471	2.3		69	29	2		2.4	5	52	40	2		1.1	93	5	2				2
Cromarty (Dean) BLK953	3.1		14	65	14	7	2.5		49	49	2		1.3	72	21	7				
Goodwood BW1143/01	2.4	2	66	26	6		2.4	6	51	38	4		1.1	91	9					
Gringegalgona O4A0907/01	2.6	5	38	53	5		2.4	5	48	48			1.3	75	20	5				
Hazeldean 9.12586	3.2		9	66	23	3	2.6		40	57	3		1.3	74	20	6				
Kerrsville NC0541	2.7		44	46	10		2.5		54	44	3		1.2	87	10	3				
Kurra-Wirra SR980	2.9	2	30	44	21	2	2.5	5	49	40	7		1.1	88	12					2
Merinotech 99.431	2.3	3	65	33			2.4		60	40			1.1	90	10					3
Nerstane 990137	2.5		56	36	9		2.5	2	47	49	2		1.1	91	7	2				
Ranken BK485	2.9	3	30	48	13	8	2.8	5	35	40	20		1.2	85	15					
Spielvogel W83/01	2.8	2	37	47	8	6	2.5	4	49	39	8		1.2	82	18					2
Suttor BLK 32	2.8		36	49	11	4	2.7		40	49	11		1.2	87	9	4				
The Mountain Dam NL.112	2.9		27	55	18		2.7		34	59	7		1.6	50	43	7				
Toland Poll LB99/01	2.4		62	35	3		2.6		41	59			1.1	91	6	3				3
Average	2.7	1	42	45	10	2	2.5	2	46	46	5		1.2	83	15	3				1

* For Face and Neck/Body Development, scores of 2,3 and 4 are most acceptable, scores of 1 and 5 are less acceptable
[1] The percentage of progeny with negative expression of the trait is described

Table 4c. Pigmentation

Sire Identity	Black Lamb Neg[1]	Wool Neg[1]	Skin Neg[1]
Bindawarra 471			21
Cromarty (Dean) BLK953		5	43
Goodwood BW1143/01			8
Gringegalgona O4A0907/01			12
Hazeldean 9.12586		8	15
Kerrsville NC0541		7	32
Kurra-Wirra SR980		2	2
Merinotech 99.431		3	15
Nerstane 990137		2	13
Ranken BK485		5	19
Spielvogel W83/01		7	26
Suttor BLK 32		4	15
The Mountain Dam NL.112		5	25
Toland Poll LB99/01		6	31
		4	20

[1] The percentage of progeny with negative expression of the trait is described

Explanation of Estimated Breeding Values, Estimated Progeny Values and Indexes

What are Estimated Breeding Values (EBVs) and Estimated Progeny Values (EPVs) ?

An Estimated Breeding Value (EBV) is an estimate of the genetic worth, or merit, of an animal for a particular trait. It can be thought of as a picture of an animal's genes for that trait.

Estimated Progeny Values (EPVs) express the expected performance of progeny of a sire, relative to that of other sires in the evaluation. EPVs are simply EBVs divided by two.

EPVs can be calculated for many of the measured traits, eg:

GFW	%	Greasy Fleece Weight (percentage)
CFW	%	Clean Fleece Weight (percentage)
BWT	%	Body Weight (percentage)
FD	μm	Fibre Diameter (micron)
CV	%	Coefficient of Variation of fibre diameter (percentage)
SS	N/ktex	Staple Strength (Newtons per kilotex)
SL	mm	Staple Length (millimetres)

The Greasy Fleece Weight, Clean Fleece Weight and Body Weight EPVs are expressed as a percentage deviation from the average. However, EPVs for these traits could also be expressed in the units of the traits, eg, kgs of wool or kgs of liveweight. Fibre diameter EPVs are expressed in microns as a deviation from the average. Staple Strength and Staple Length EPVs are also expressed as deviations from average, in units of the respective trait. Coefficient of Variation of Fibre Diameter EPVs are expressed in percentage units as a deviation.

EPVs are a more accurate indicator of a sire's relative genetic merit than simple sire averages as they take into account:

- the heritability of the trait, ie, how much of the superiority is actually due to the sire's genes and can be passed on to its progeny;
- the number of progeny a sire has in the analysis;
- the measurements of other traits. Where two traits are affected by the same genes (ie, the traits are genetically correlated) the progeny records for both traits give us additional information to make the EPVs for both traits more accurate.
- Non-genetic, or environmental effects. These are factors that influence performance but are not passed on to the progeny. A simple example is that twins tend to be smaller (on average) and cut less wool than single-born lambs: This is not because they have poorer genes for body weight or fleece weight, but because they have had to share their dam's uterus (maternal nutrition) and milk supply (pre-weaning nutrition) with another lamb. Their environment has not (on average) been as good as that experienced by single lambs - this is a non-genetic influence that we need to account for in getting an accurate picture of the value of the genes.

Accuracy

The accuracy of the assessment of the genetic merit of an individual sire by progeny testing is a function of both the heritability of the trait and the number of the sire's progeny assessed.

No of progeny	Heritability					
	0.1	0.2	0.3	0.4	0.5	0.6
5	0.34	0.46	0.54	0.60	0.65	0.68
10	0.45	0.59	0.67	0.73	0.77	0.80
20	0.58	0.72	0.79	0.83	0.86	0.88
30	0.66	0.78	0.84	0.88	0.90	0.92
40	0.71	0.82	0.87	0.90	0.92	0.94
50	0.75	0.85	0.90	0.92	0.94	0.95
100	0.85	0.92	0.94	0.96	0.97	0.97

It should be noted that well designed and run progeny trials should have adequate progeny per sire.

Examples of using EPVs

	EPV CFW %	EPV FD
Ram 1	+8	-1.2
Ram 2	+1	+0.8

Ram 1 has an EPV for Clean Fleece Weight of +8%. That is, the progeny of Ram 1 are expected to be 7% superior (8.0 - 1.0) for Clean Fleece Weight than the progeny of Ram 2 with an EPV of 1%.

Similarly, Ram 1 has an EPV for Fibre Diameter of -1.2μ. Ram 2 has an EPV for Fibre Diameter of +0.8μ. The progeny of Ram 1 are expected to be 2μ finer (-1.2 - 0.8) than the progeny of Ram 2.

Sire Averages

Sire Averages are the average performance of all the progeny of a sire. No account is taken of the heritability of the characters. Sire averages are much less reliable predictors of sire performance than are EPVs.

Breeding Objectives and Index Values

The breeding objective is what you want your breeding program to achieve.

Indexes are just a way of determining which animals most closely match your breeding objective. Three different breeding objectives are:

Breeding Objective or Aim	Index	Micron Premium
Near maximum increase in fleece weight, maintaining fibre diameter	3% MP	3%
Reduce fibre diameter and increase fleece weight	6% MP	6%
Greater reduction in diameter and maintain fleece weight	12% MP	12%

The 3% micron premium index ranks animals with high fleece weights more highly. It is valuable for those breeders who wish to maintain their fibre diameter and place maximum emphasis on increasing the fleece weight of their flock. The 12% micron premium index is useful for breeders who wish to place maximum emphasis on decreasing their flock fibre diameter, without losing fleece weight. A middle view is to use the 6% micron premium index that simultaneously increases fleece weight and decreases fibre diameter.

Explanation of Micron Premium

Micron premiums are derived from market values and are set by the market. The micron premium tells you how much the price of wool increases if the fibre diameter decreases by one micron.
For example, what is an 8% micron premium? If 20μ wool is worth $5.00/Kg clean and 19μ wool is worth $5.40/kg (a difference of $0.40) then the micron premium is 40 divided by 500 x 100 = 8%

Calculation of Index

To calculate an index, the Estimated Breeding Value for each trait is multiplied by its Economic Value (EV). These products are then summed and then added to 100. This can be described mathematically as:

Index = $100 + (EBV_{trait\ 1} \times EV_{trait\ 1}) + (EBV_{trait\ 2} \times EV_{trait\ 2}) + \ldots (EBV_{trait\ n} \times EV_{trait\ n})$
where   there are n traits to be included in the index.
    EBV means Estimated Breeding Value
    EV means Economic Value.

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