

# BREEDING NATURALLY

## BREECH STRIKE RESISTANT MERINOS

**Breech Wrinkle 2 score and less, Dags 2 score and less, Urine Stain 2 score and less and Breech Cover 3 score and less are the key targets to reduce the risk of breech strike to low levels. The lower the score the lower the risk.**

**This article looks at breeding for lower wrinkle, productivity and fleece weight. An article looking at dags and wrinkle will be in the September edition of *Beyond the Bale*.**

**W**oolgrowers have many questions about breeding animals naturally resistant to breech strike.

- Can I breed low wrinkle, high fleece weight Merinos?
- Why aren't there more low wrinkle, high fleece weight Merino Sires?
- I cannot find high index, moderate body weight, fine wool, low wrinkle rams?

The best source of objective information on finding resistant Merinos, despite some limitations, is obtained using the MERINOSELECT animal search function. It provides growers with information on top sires that are involved in breeding the next generation of Merinos, many have semen available and are breeding reasonable numbers of flock rams.

The limitations are that only 30% of Australia's ram breeders have animals in the MERINOSELECT system (although 70% of semen sellers are members) and not all these

animals have records for the breech traits, reproduction and adult fleece weight. Very low wrinkle animals that are all score 1 and without variation in a management group cannot get Australian Sheep Breeding Values (ASBVs) for wrinkle. This impacts on very low wrinkle Merino and Dohne breeders. These breeders need to enter sires in Sire Evaluation as a means to create Breech Wrinkle ASBVs for their animals or they can provide neck wrinkle scores as it is highly correlated with breech wrinkle.

The sire ASBVs required by a Merino breeder to breed progeny that are wrinkle score 2 or less varies due to variations in the environment across Australia. For example, in high wrinkle country target ASBVs are -0.8 to -1.0, moderate wrinkle country -0.7 and low wrinkle country around -0.3. These are generalisations that need to be modified according to every woolgrower's own environment and their country's risk factors for breech strike. Across a range of environments and sheep types, trials have shown that mulesing reduces breech wrinkle by around 1.0 wrinkle score and dags by 0.4 dag score.

So can woolgrowers breed productive, naturally low wrinkle, high fleece weight Merinos?

Table 1 shows the Average ASBVs of the top 10 sires and was created by searching the MERINOSELECT database for all sires with more than 15 current progeny, ranked in the Merino Production Plus index order. There were 2,641 eligible sires in the unrestricted search. Their average ASBV for ACFW is 34.5 and Wrinkle is +0.3.

When the database search criteria on the upper limit of Breech Wrinkle was changed progressively from +0.2 to an improved -1.0, the average Adult Weight (AWT) ASBV in the top 10 sires moved from 5.4 to 9.2%.

Cross-checking this AWT% range against the MERINOSELECT ASBV percentile bands in Table 4, shows a 5.6% AWT reflects rams in the top 30%, and a 9.1% AWT reflects rams in the top 5%. Adult Fleece Weight, however, fell but remained in the top 10% (+25), Fibre Diameter fell from the top 25% to the bottom 25% (-1.6 to -0.4), Wrinkle improved from the bottom 15% to the top 1% (+0.3 to -1.1), Dags largely remained at breed average 50% (-0.1) and the MP Plus Index fell from the top value but remained in the top 5% (224 to 177).

**This database search analysis shows that breeding productive low wrinkle naturally breech strike resistant Merinos can be achieved in low dag country using existing sires based on the MP Plus index but with a large increase in Fibre Diameter and Adult Body Weight.**

The ASBVs of some of the leading low wrinkle sires are listed in the bottom half of Table 1. Sire A is in the top 1% for fleece weight and top 1% for Wrinkle. It is a young sire from a ram breeder in low dag country who is putting large selection pressure on high fleece weight and low wrinkle. Progress is easier for medium wool Merinos in low dag environments.

Table 2 was created by searching all sires with more than 15 current progeny, ranked this time in the Dual Purpose Plus Index order. There were again 2,641 eligible sires in the unrestricted search and the average ASBVs of the top 10 sires are listed. For the top 10 sires the average ASBV for Adult Clean Fleece Weight is higher at 29.6, Fibre Diameter higher at -1.2, yet the Wrinkle ASBV is lower at -0.2 compared in Table 1.

The upper limit search criteria for Breech Wrinkle was progressively changed from plus 0.2 to minus 1.0. The impact this had on the top 10 sires average results based on the DP Plus Index are listed in Table 2. In percentile terms Adult Weight remained in the top 1 to

**Table 1. All Merino Types, Average ASBVs of top 10 sires with more than 15 progeny based on MP+ Index for each search criteria**

Search Criteria	Total No of Sires Meeting Criteria	Average ASBV of top 10 sires in each search					
		AWT %	ACFW %	YFD	EBWR Sc	LDAG Sc	MP+ Index
Open unrestricted search	2641	5.4	34.5	-1.6	0.3	0.2	224
Breech Wrinkle <= +0.2	1910	8.6	26.2	-1.2	-0.2	-0.1	215
Breech Wrinkle <= -0.1	1362	9.7	24.5	-1.1	-0.3	0.0	215
Breech Wrinkle <= -0.4	809	10.4	23.4	-0.8	-0.6	-0.1	208
Breech Wrinkle <= -0.7	349	10.4	25.2	-0.2	-0.9	0.0	196
Breech Wrinkle <= -1.0	112	9.2	22.1	-0.4	-1.1	-0.1	177
Leading Low Wrinkle Sire A		11.6	34.3	-0.5	-1.3	0.0	186
Leading Low Wrinkle Sire B		10.2	28.4	-0.5	-1.1	-0.3	174
Leading Low Wrinkle Sire C		12.3	24.1	-1.0	-0.7	-	229
Leading Low Wrinkle Sire D		9.4	26.5	-0.4	-0.7	-0.2	202
Leading Low Wrinkle Sire E		14.3	26.2	0.3	-0.7	-0.2	214

5%, Fleece Weight fell from top 1% to top 30%, Fibre Diameter fell from top 40% to bottom 20%, Wrinkle improved from average 50% to top 1-5%, Dags improved from bottom 20% to top 30% and the DP Plus Index remained constant from the near top value to top 1%.

**This database search shows that breeding productive low wrinkle Merinos can be achieved using existing sires based on the DP Plus index with a fall in fleece weight and large increase in fibre diameter.**

Table 1 and 2 show that reducing wrinkle and increasing fleece weight is difficult if you are breeding fine wool sheep as there were large increases in fibre diameter. There are very few ultrafine and superfine animals in MERINOSELECT with wrinkle scores less than zero so a similar process for Table 1 and 2 was not possible for superfine Merino types.

So for the superfine Merino type, a different approach was undertaken. The upper fibre diameter limit was reduced progressively from -2.0 to -4.0. The Wrinkle Score of the highest FP Plus indexing sires remained in the bottom 10%

and nearly all sires were higher than +0.3. High Indexing, low wrinkle superfine sires are difficult to find and breed, but ram breeders are taking up the challenge. There is evidence in the pedigree of the leading superfine sires that 'outcross' sires are being used to reduce wrinkle, increase fleece weight, while attempting to minimise the increase in fibre diameter in superfine Merinos.

Fine wool Non Mules breeders have long used other management strategies to help reduce the risk of breech strike, such as chemical prevention, additional crutching and can mostly provide closer supervision of their animals. Breeding naturally breech strike resistant low wrinkle fine wool Merinos will take some considerable time. Much of the fine wool environment is low phenotypic wrinkle country; cold, wet, windy and wormy and ASBVs of -0.3 to -0.5 are likely to be sufficient. In addition much of the country suited to fine wool is also high dag country and wrinkle is only part of the solution. Breeding for lower dags will be addressed in an article in the next edition of Beyond the Bale.



Along with reducing wrinkle; reducing dags, chemical resistance and the large price discounts on non mulesed Merinos in many regions, remain the key barriers in moving to a Non Mulesed Merino enterprise.

**MORE INFORMATION**

- MERINOSELECT Animal Search <http://sgsearch.sheepgenetics.org.au/?dataset=5>
- Breeding for Breech Strike Resistance resources on the AWI website [www.wool.com/flystrike-breeding](http://www.wool.com/flystrike-breeding)
- Stockmanship and Merino Visual Classing workshop resources on the AWI website [www.wool.com/stockmanship](http://www.wool.com/stockmanship)

**Table 2. All Merino Types, Average ASBVs of the top 10 sires with more than 15 progeny based on DP+ Index for each search criteria**

Search Criteria	Total No of Sires Meeting Criteria	Average ASBV of top 10 sires in each search					
		AWT %	ACFW %	YFD	EBWR Sc	LDAG Sc	DP+ Index
Open unrestricted search	2641	9.1	29.6	-1.2	-0.2	0.1	234
Breech Wrinkle <= +0.2	1910	9.9	22.8	-0.9	-0.4	0.0	232
Breech Wrinkle <= -0.1	1362	9.9	22.7	-0.9	-0.4	0.0	231
Breech Wrinkle <= -0.4	809	10.4	23.1	-0.8	-0.6	-0.1	226
Breech Wrinkle <= -0.7	349	10.2	21.1	-0.4	-0.9	-0.1	212
Breech Wrinkle <= -1.0	112	9.7	18.8	-0.3	-1.1	-0.2	196
Leading Low Wrinkle Sire A		11.6	34.3	-0.5	-1.3	0.0	193
Leading Low Wrinkle Sire F		11.9	27.3	0.5	-1.1	-0.1	210
Leading Low Wrinkle Sire G		9.4	26.5	-0.4	-0.7	-0.2	218

Abbreviations: DP+ Index - Dual Purpose Plus index

**Table 3. Ultrafine/ Superfine Type, Average ASBVs of the top 10 sires with more than 15 progeny based on FP+ Index for each search criteria**

Search Criteria	Total No of Sires Meeting Criteria	Average ASBV of top 10 sires in each search					
		AWT %	ACFW %	YFD	EBWR Sc	LDAG Sc	FP+ Index
Yearling FD <= -2.0	139	0.4	17.8	-3.0	0.6	-0.1	179
Yearling FD <= -2.5	87	0.5	16.5	-3.1	0.6	0.0	178
Yearling FD <= -3.0	37	1.2	11.0	-3.5	0.5	-0.1	172
Yearling FD <= -3.5	24	0.0	2.2	-4.0	0.3	-0.1	158
Yearling FD <= -4.0	14	-0.7	-8.9	-5.2	N/A	N/A	131
Leading Low Wrinkle Sire H		-1.5	-0.8	-3.6	-0.2	0.0	144
Leading Low Wrinkle Sire I		3.2	6.6	-4.3	-0.1	-0.2	160
Leading Low Wrinkle Sire J		0.7	10.6	-3.5	0.2	0.1	175

Abbreviations: FP + Index - Fine Production Plus Index

**Table 4. MERINOSELECT ASBV percentile table for 2018 drop. (21st April 2020)**

PERCENTILE	AWT %	ACFW %	YFD	EBWR Sc	LDAG Sc	FP+	MP+	DP+
TOP VALUE	21.9	51.1	-6.1	-1.7	-0.8	201	224	244
TOP 1%	11.4	33.1	-3.3	-1.2	-0.4	172	188	194
TOP 5%	9.1	27.9	-2.5	-1.0	-0.3	161	174	178
TOP 10%	7.9	24.8	-2.2	-0.8	-0.3	155	166	169
TOP 20%	6.6	21.1	-1.8	-0.6	-0.3	148	158	160
TOP 30%	5.6	18.2	-1.5	-0.5	-0.2	143	125	153
TOP 40%	4.7	15.7	-1.2	-0.3	-0.1	139	147	148
TOP 50%	3.9	13.3	-1.0	-0.2	-0.1	136	143	144
TOP 60%	3.1	10.8	-0.8	-0.1	0.0	132	138	139
TOP 70%	2.2	8.2	-0.6	0.0	0.0	128	133	134
TOP 80%	1.2	5.1	-0.3	0.2	0.1	123	127	129
TOP 90%	-0.2	0.8	0.2	0.4	0.2	115	119	121