

# BREEDING NATURALLY BREECH STRIKE RESISTANT MERINOS - PART 2

Part 1 of this two-part series, published in the June 2020 edition of *Beyond the Bale*, reported the impact on existing high indexing MERINOSELECT sires due to increasing selection pressure on lower wrinkle. Here in Part 2, we look at the impact on these high indexing sires due to increasing selection pressure on lower dags.

## KEY POINTS

The lower the breech score the lower the risk of breech strike, and in most locations across Australia the following are the key visual score targets to reduce the risk of breech strike to levels where sheep may be considered naturally resistant without an overreliance on chemicals:

- Dags 2 score and less
- Breech Wrinkle 2 score and less
- Urine Stain 2 score and less; and
- Breech Cover 3 score and less.

Dags are an important cause of breech strike if you are in 'high dag country'. Selecting for lower dags is a priority objective when breeding Merinos naturally resistant to breech strike.

However, if you are in 'low dag country' and don't sell re-stockers into 'high dag country', then selecting for dag is not a priority and will reduce your gains in the more important traits for your enterprise and location.

**A**cross a range of environments and sheep types, trials have shown that mulesing reduces breech wrinkle by around one wrinkle score, ranging from 1.5 to 0.5 of a score (larger reductions are made in sheep with higher natural wrinkle). Mulesing also reduces dag score by 0.4 of a score.

But are there existing sires that woolgrowers can use to breed productive, naturally low dag rams? Given the easy access to data in MERINOSELECT, we searched for high indexing Merino sires with increased selection pressure on dags to answer this question.

Table 1 was created searching MERINOSELECT sires, using the Web Search function, for sires with more than 15 current progeny and ranked in Merino Production Plus (MP+) Index order and progressively placing increased upper limits on dag. In the unrestricted search, there were 2,641 eligible sires and the average ASBVs of the top 10 sires are listed. The LDAG Sc ASBV for these top 10 sires was +0.2 which is 0.3 of a



Examples of breech strike resistant Merinos.

dag score higher than the MERINOSELECT breed average of -0.1 (shown in Table 3).

The upper limit search criteria for Late Dag ASBV (LDAG Sc) was progressively changed from -0.1 to -0.6. The impact this had on the top 10 sire average results based on the Merino Production Plus (MP+) Index are listed in Table 1. In percentile terms (using the ASBV percentile Table 3) Adult Body Weight (AWT) remained in the top 10 to 20%, Adult Clean Fleece Weight (ACFW) fell from the top 1% (34.5) to top 40% (15.4), Yearling Fibre Diameter (YFD) fell from the top 30% (-1.6) to bottom 30% (-0.5), Early Breech Wrinkle Score (EBWR Sc) improved from the bottom 20% (+0.3) to top 40% (-0.4), LDAG Sc improved from the bottom 10% (+0.2) to more than the top 1% (-0.7) and the MP+ Index fell from the near top value (224) to top 10% (169).

This analysis demonstrates that breeding productive low dag Merinos can be achieved using existing sires and the MP+ Index as there are MERINOSELECT sires that are pushing the boundaries for high production with low dag. However, in general, woolgrowers need to be prepared for a fall in fleece weight and a large increase in fibre diameter particularly in the fine and superfine wool Merinos. Ram breeders are actively seeking productive, strike resistant sires and hopefully before long there will be more options available for fine and superfine ram buyers.

## BREECH WRINKLE,

## DAG AND FIBRE DIAMETER

Woolgrowers in 'high dag country' need significant reductions in both breech wrinkle and dag to breed naturally resistant Merinos. Table 2 was created searching all sires with more than 15 current progeny, ranked in MP+ Index order by progressively lowering upper limits on both breech wrinkle and dag score ASBVs.

When the upper limit for breech wrinkle and dag score in the search criteria fell, fleece weight ASBV fell and fibre diameter ASBV increased. Again, this trend illustrates the difficulty for woolgrowers in 'high dag country' who need fine wool with low diameter variation, to breed for reduced natural resistance to breech and body strike. A few MERINOSELECT sires could be found that were low in fibre diameter ASBV (less than -2.0) with moderately low breech wrinkle and dag; their average ASBVs are listed in the bottom half of Table 2.

Progress can be made in sires with fibre diameter ASBV less than -2.0 by limiting wrinkle score ASBV to -0.2 and dag score ASBV to -0.1 as shown in Table 2. However, with current MERINOSELECT sires, it will take many years to breed a flock of high indexing, low fibre diameter Merinos that are moderate to low in wrinkle (-0.6) and dag (-0.4) ASBV.

Of the 2,641 eligible sires available on MERINOSELECT, only one sire in the database

is a trait leader (top 10%) for Wrinkle, Dag, Adult Fleece Weight ASBVs and the MP+ Index, and this sire's Fibre Diameter ASBV is quite high at +0.5.

Breeding naturally breech strike-resistant high indexing fine wool Merinos will take considerable time, requiring woolgrowers to outcross to low wrinkle, low dag, higher fibre diameter sires and then backcross to reduce fibre diameter, whilst keeping wrinkle and dag low.

Fine wool breeders that already manage their flystrike risk without mulesing have long used other management strategies to help reduce the risk of breech strike. Approaches include regular long acting chemical treatments, additional crutching and shearing, and closer supervision of their animals. Much of the fine wool environment is 'low wrinkle country': cold, wet, windy and wormy where Breech Wrinkle ASBVs of -0.3 to -0.5 are likely to be sufficient.

Importantly, from the AWI Breeding for Breech Strike Resistance project we know that irrespective of the starting natural score, every 0.1 of a score reduction in either wrinkle, cover, stain and/or dags will reduce your risk of breech strike. Avoiding high breech score sires can have an almost immediate effect in reducing the risk of breech strike. B

**MORE INFORMATION**

- Breeding naturally breech strike resistant Merinos – Part 1, *Beyond the Bale*, June 2020, pages 52-53: [www.wool.com/breeding-part1](http://www.wool.com/breeding-part1)  
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)

Abbreviations: AWT - Adult Body Weight, ACFW - Adult Clean Fleece Weight, YFD - Yearling Fibre Diameter, NLW - Number of Lambs Weaned, EBWR Sc - Early Breech Wrinkle Score, LDAG Sc - Late Dag Score, MP+ - Merino Production Plus Index, FP+ - Fibre Production Plus Index, DP+ Dual Purpose Plus Index.

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 Kg	ACFW %	YFD	NLW	EBWR Sc	LDAG Sc	MP+ Index
Open unrestricted search	2,641	5.4	34.5	-1.6	14.7	0.3	0.2	224
Dags <-0.1	896	6.2	28.3	-1.7	16.3	0.0	-0.2	216
Dags <-0.2	472	7.2	26.3	-1.5	15.1	-0.1	-0.3	214
Dags <-0.3	229	6.9	31.8	-1.0	11.3	-0.2	-0.4	200
Dags <-0.4	100	5.8	25.6	-0.9	6.3	-0.1	-0.5	188
Dags <-0.5	42	7.0	15.7	-0.4	10.1	-0.4	-0.6	174
Dags <-0.6	24	7.7	15.4	-0.5	10.6	-0.4	-0.7	169
Leading Low Dag Sire A		9.5	46.2	0.7	7.0	-0.2	-0.6	195
Leading Low Dag Sire B		5.1	18.8	-2.3	0.0	-0.3	-0.5	187
Leading Low Dag Sire C		6.0	25.5	0.1	5.0	-0.6	-0.5	180
Leading Low Dag Sire D		8.4	7.6	-0.7	15.0	0.0	-0.9	172

Table 2. 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 Kg	ACFW %	YFD	NLW	EBWR Sc	LDAG Sc	MP+ Index
Breech Wrinkle <-0.2 and Dags <-0.1	606	9.5	22.7	-0.9	16.3	-0.4	-0.3	209
Breech Wrinkle <-0.4 and Dags <-0.2	268	10.7	18.6	-0.9	14.4	-0.7	-0.3	202
Breech Wrinkle <-0.5 and Dags <-0.3	103	9.7	20.6	-0.9	8.7	-0.7	-0.4	188
Breech Wrinkle <-0.6 and Dags <-0.4	39	8.6	12.6	-0.5	7.7	-0.8	-0.5	165
Breech Wrinkle <-0.2, Dags<-0.1 and YFD <-2	30	4.3	18.1	-2.3	2.0	-0.3	-0.2	175
Breech Wrinkle <-0.4, Dags<-0.2 and YFD <-2	9	6.6	5.9	-2.4	1.6	-0.6	-0.4	155
Trait Leader Wrinkle, Dag, Fleece Wt & MP+	1	11.6	37.5	0.5	8.0	-1.0	-0.3	181

Table 3. MERINOSELECT ASBV percentile table for 2018 drop (21st April 2020)

Percentile	AWT Kg	ACFW %	YFD	NLW	EBWR Sc	LDAG Sc	FP+	MP+	DP+
Top Value	21.9	51.1	-6.1	29	-1.7	-0.8	201	224	244
Top 1%	11.4	33.1	-3.3	15	-1.2	-0.4	172	188	194
Top 5%	9.1	27.9	-2.5	10	-0.9	-0.3	161	174	178
Top10%	7.9	24.8	-2.2	7	-0.8	-0.3	155	166	169
Top 20%	6.6	21.1	-1.8	5	-0.6	-0.2	148	158	160
Top 30%	5.6	18.2	-1.5	3	-0.5	-0.2	143	125	153
Top 40%	4.7	15.7	-1.2	2	-0.3	-0.1	139	147	148
Top 50% [average]	3.9	13.3	-1.0	1	-0.2	-0.1	136	143	144
Top 60%	3.1	10.8	-0.8	0	-0.1	0.0	132	138	139
Top 70%	2.2	8.2	-0.6	-2	0.0	0.0	128	133	134
Top 80%	1.2	5.1	-0.3	-3	0.2	0.1	123	127	129
Top 90%	-0.2	0.8	0.2	-5	0.4	0.2	115	119	121

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