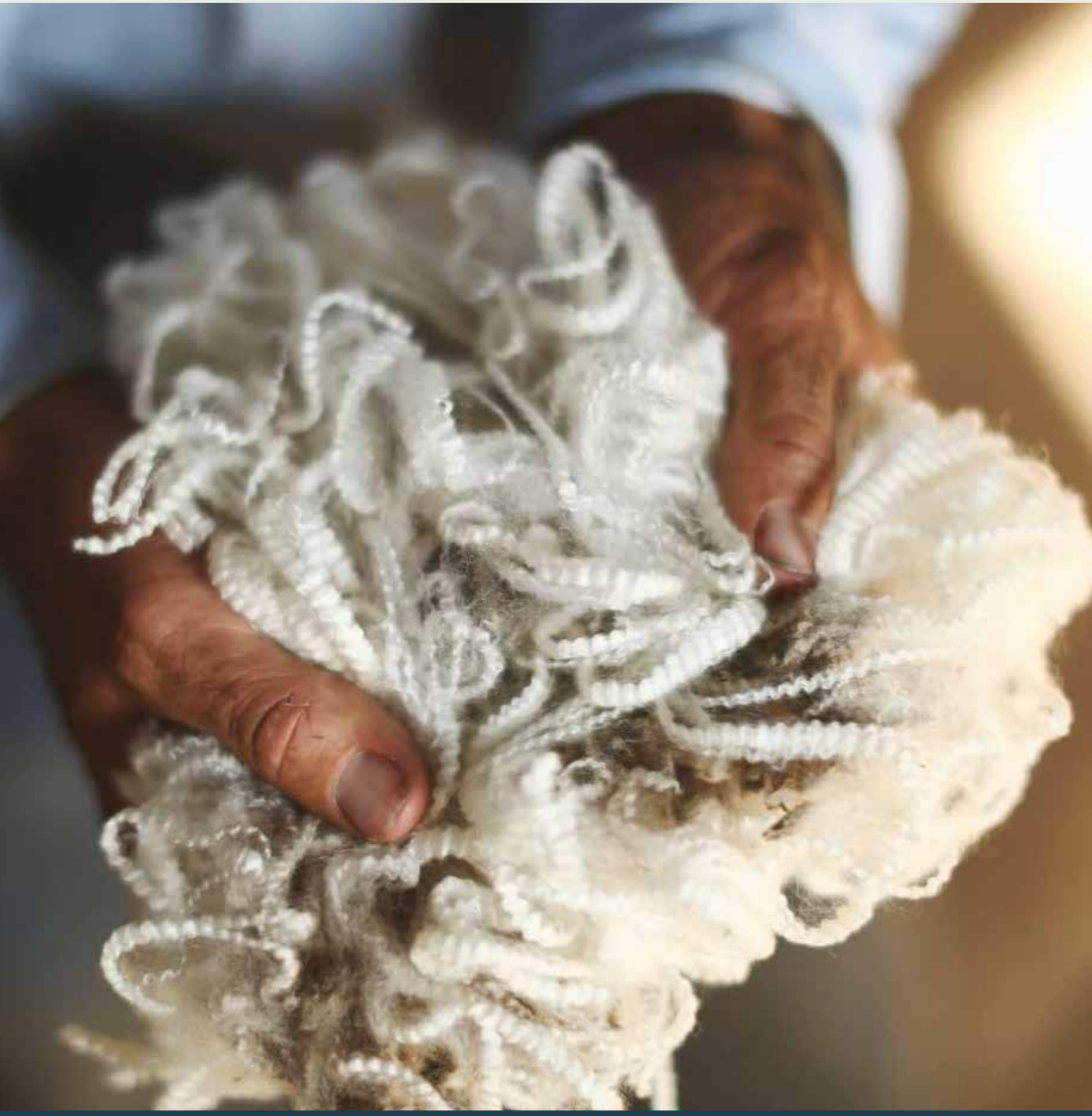
SRS GENETICS

FACT SHEET

Increased Profitability with SRS® Genetics



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The SRS® Breeding System

SRS® Merino sheep are the result of selecting for low primary fibre diameter and high density plus high length of wool fibres. The breeding system was developed by SRS® Chief Scientist and Breeding Consultant, Dr Jim Watts, a research veterinarian who specialised in skin and fleece biology. It is based on Moore's pre-papilla cell hypothesis of follicle formation and fibre growth.

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Breeding Basics

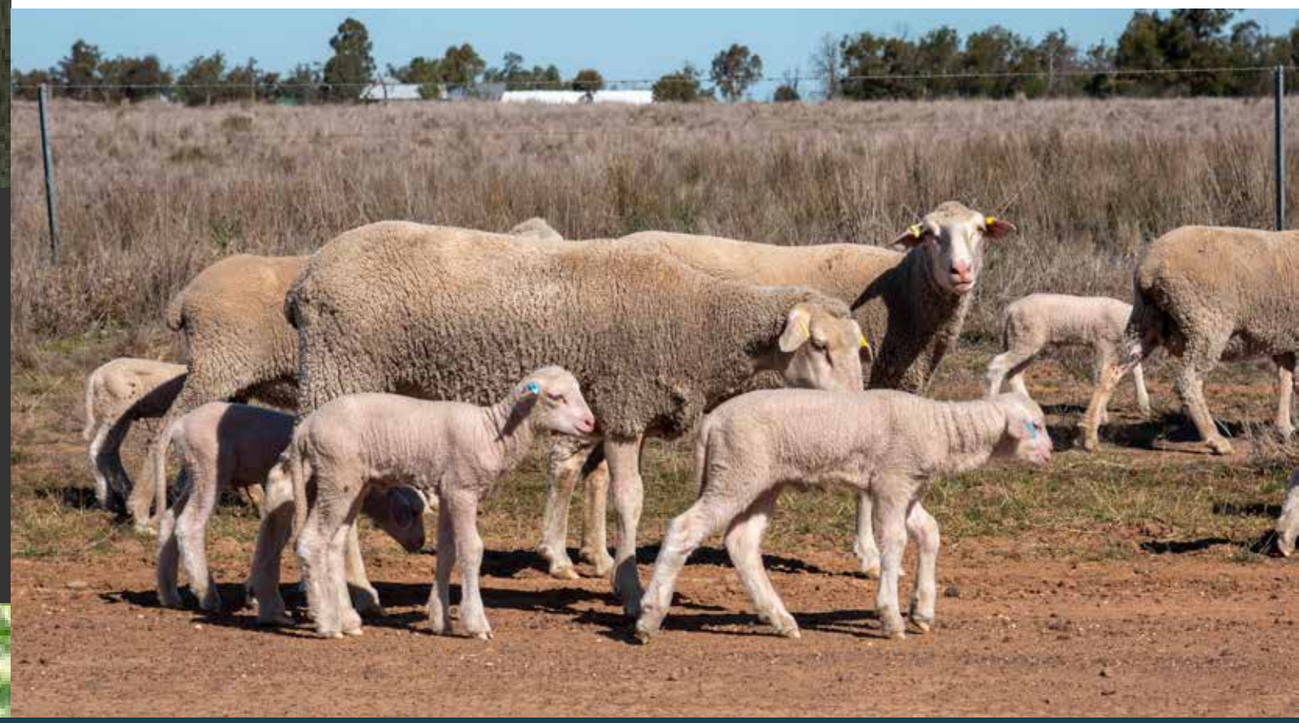
The SRS® Breeding System has designated selection protocols and specific animal and fleece standards that are quantifiable at both genetic and phenotypic levels. By selecting sheep using this system exceptional fibre quality and quantity, processing performance and end product quality are realized.

- Low primary fibre diameter ensures that more of the pre-papilla cells are channelled into producing more wool follicles on the animal's body.
- High fibre density occurs when there are many wool follicles populating each follicle group in the sheep's skin and these groups are packed closely together. When this happens, the wool fibres become highly aligned, evenly sized and are visible in the fleece as numerous fibre bundles.
- Increased fibre length is expressed most clearly in fleeces that have high crimp amplitude (deep crimp) and low crimp frequency (bold crimp).
- SRS® flocks are plain bodied and free of heavy wrinkle which means animals do not need to be mulesed and are naturally resistant to fly strike.

The Changing Face of the Merino

As predicted at the outset of SRS® genetic selection in 1988, the Merino has changed from its traditional appearance into a plain-bodied and early maturing sheep with a triple wedge shape and open face, long neck and bare points *(see Figure 1)*. SRS® types have thin and loose skin and the wool on the underside of the neck drapes freely without any horizontal skin wrinkles or folds. There is no skin wrinkling over the poll, topside of the neck (no 'collar'), body trunk (no 'tiger stripes'), topline (no 'scribble'), tail (no 'fan tails') and no cross folds down the back legs.

Figure 1 (left): *Eight month old SRS® Merino lambs, recently shorn.*



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Typical SRS® Traits Lead to Increased Profitability

1. High fleece weights of fine wool

In 10 trials conducted across Australia from 1995 to 2000, SRS® Merino sheep grossed $67 per fleece compared with $29 per fleece for traditionally selected sheep, producing 10% more wool that was 2.5 microns finer.

In similar trials conducted in 2010, these fleece returns were even higher for SRS® Merino sheep due to a combination of higher fleece weights, lower fibre diameter and better wool prices. Five examples for SRS® Merino flocks located in central western New South Wales are listed in Table 1. Along with the excellent fleece returns, higher weaning percentages *(see Fact Sheet 3)* have bolstered surplus sheep sales whilst allowing greater genetic selection pressure to be applied to the flocks.

Table 1: Fleece productivity and fecundity of SRS® Merino flocks today.

Flock	Fleece weight *(kgs)*	Fibre diameter *(microns)*	Lambs weaned
A	6.5	18.6	120%
B	7.5	19.5	125%
C	7.0	18.8	110%
D	8.1	19.8	128%
E	6.7	18.5	120%

2. Exceptional wool quality

The wools produced by commercial members of the SRS® Group are exceptionally soft, lustrous and deeply crimped. The wools are white, and have remained white throughout the recent summer months of very high rainfall, heat and humidity experienced in eastern Australia *(see Figure 2)*. These wools are highly sort after in the marketplace, particularly with their added ethical & sustainable credentials.

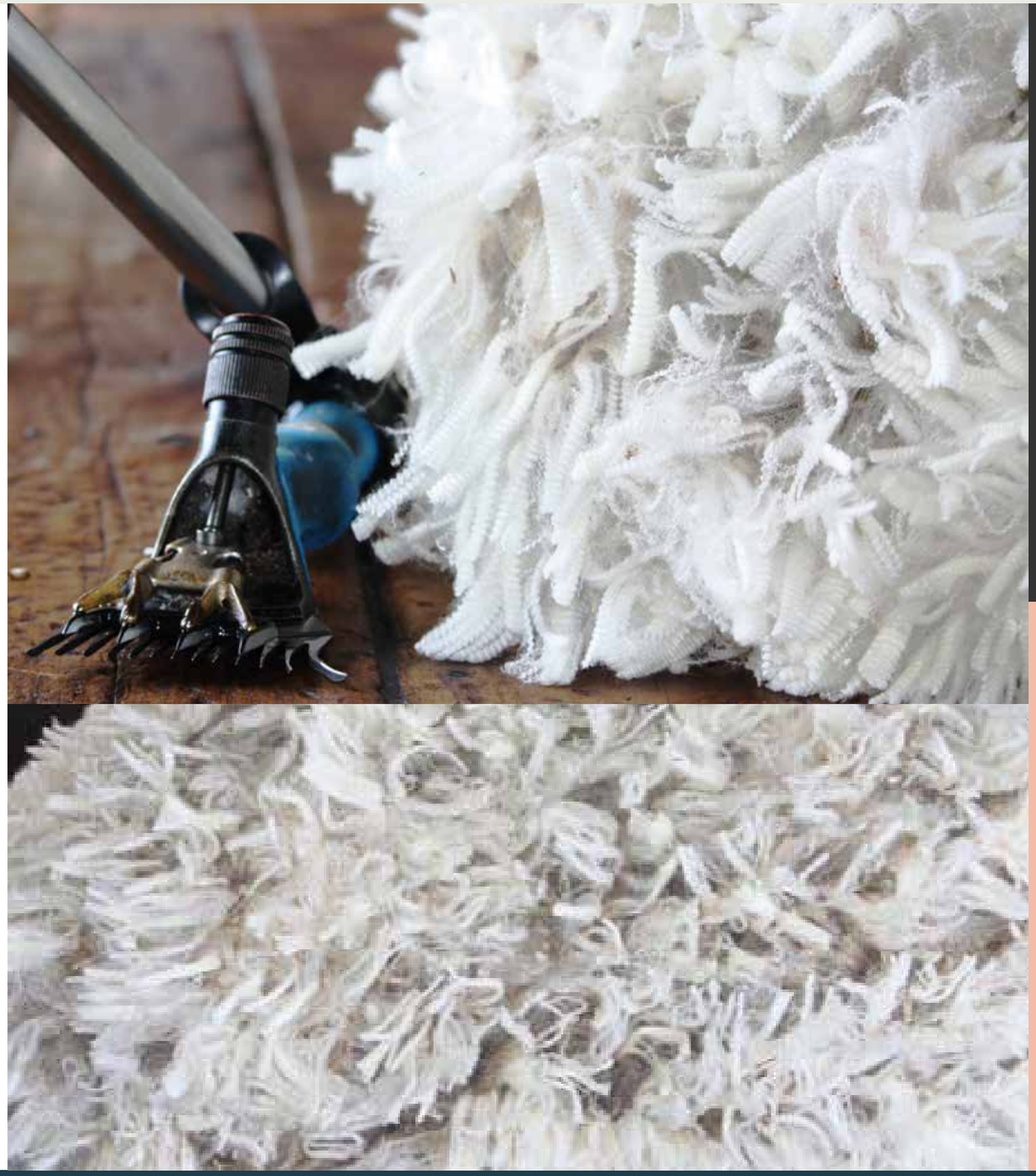

Figure 2 (right): *SRS® Merino wools from Mitchell, Queensland, Australia. The sheep were exposed to 800mm of rain from November 2010 to January 2011 and 290mm in March 2011. Daily temperatures were often above 40° Celsius with constantly high humidity.*

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"The demand for SRS® fibre has been created by brands valuing the fact that they now have trace-back to the source and can guarantee the quality and ethical/sustainable credentials of the product. All customers are extremely satisfied with the quality of the SRS® fibre and spinners have found that the wool tops always perform at the high end of the predictive scale so they get good spinning results. Good yarn then makes it easier to produce high quality circular knitted fabric for the performance/base layer market."

Peter Vandeleur
Manager of the NewMerino® chain of custody
www.newmerino.com.au

Softness of wool is very important for next-to-skin comfort of people wearing woollen garments. Softness of raw wool is measured by resistance to compression with the lower the measurement, the softer the wool. Cashmere is regarded as the world's softest fibre with a resistance to compression of about 5.8 kilopascals. SRS® Merino wools have tested recently at a softness level of 3.5 kilopascals, well below the softness of cashmere. Traditionally bred Merino wool is not nearly as soft, testing at 10 to 12 kilopascals.

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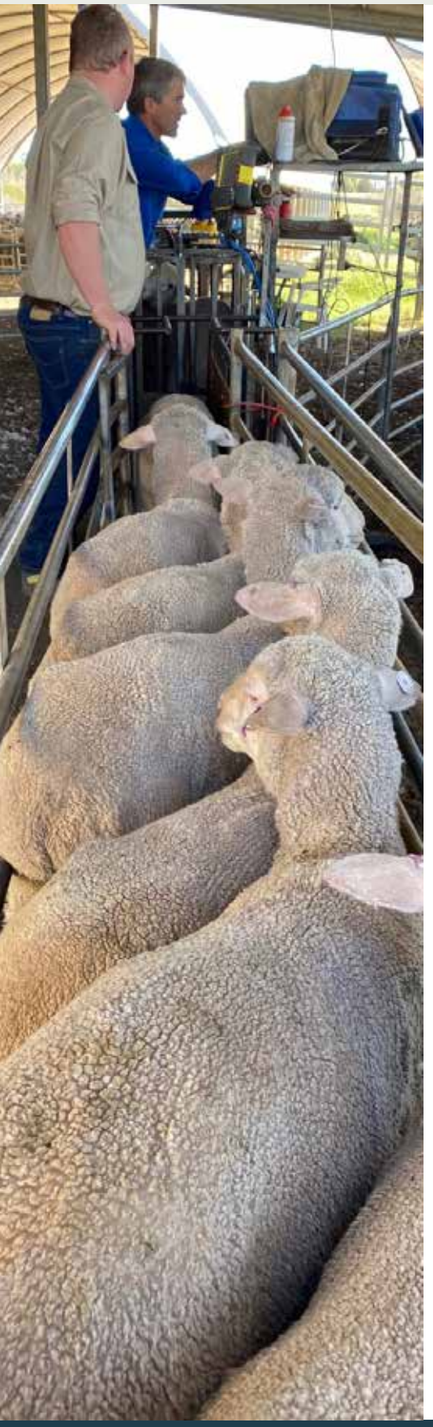

3. High levels of fibre density and length

SRS® Merino sheep are the result of selecting for low primary fibre diameter and high density plus high length of wool fibres. High fibre density occurs when there are many wool follicles populating each follicle group in the sheep's skin and these groups are packed closely together. When this happens, the wool fibres become highly aligned, evenly sized and are visible in the fleece as numerous fibre bundles. Increased fibre length is expressed most clearly in fleeces that have high crimp amplitude (deep crimp) and low crimp frequency (bold crimp).

In a recent study, randomly selected SRS® type Poll Merino rams were measured for key skin and fleece characteristics as shown in Table 2 below. As can be seen, all have high levels of fibre density & length and the mean primary fibre diameters are exceptionally fine.

Table 2: Wool follicle and fibre traits of select SRS® Poll Merino rams.

Ram no.	Primary fibre diameter *(microns)*	Secondary fibre diameter *(microns)*	Density *(follicles/mm²)*	Fibre length *(mm/day)*
5	14.3	16.5	80.9	-
13	15.7	16.3	92.6	0.71
30	12.1	15.1	74.3	0.57
37	13.8	15.9	107.3	0.52
80	13.5	16.4	83.9	0.51
551	14.4	16.3	85.5	0.48
700	13.1	16.0	77.5	0.58

Traditionally bred Merino sheep tend to have a mean primary fibre diameter that is 5 to 10 microns coarser than SRS® types. They also have a much lower mean follicle density and mean fibre length at about 55 follicle per square millimetre of skin and about 0.35 millimetres per day respectively.

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4. Low maintenance

SRS® Genetics provides a cutting edge solution to producing an easy-care, multi-purpose Merino that is highly profitable.

The plain bodies and minimal skin wrinkle of SRS® Merinos make them naturally resistant to flystike which reduces the amount of labour and chemicals required for management during peak times.

"After buying our first SRS® rams in 2001, we began the process of breeding an easier care sheep that still remains productive. By 2004, we felt we had no need to treat our breeding flock for body strike. From Christmas 2009 to March 2010 we received 433 millimetres (11 inches) of rain and during this period we had no fly strike with our sheep in full wool. Over this time, we have still managed to increase our wool cut and decrease our micron."

C & J Dixon
"Lavendo", Quandialla, NSW

SRS® Merinos are easy to shear with virtually no skin cuts. Shearing tallies per shearer improve by about 30% compared with shearing traditionally bred Merinos.

"From a shearers perspective, SRS® Sheep are far superior to shear than traditional sheep. This is due to less wrinkled skin which results in less skin cuts and less struggling of the sheep and the shearer. The shearer's comb travels through the fibre a lot easier because they are not intertwined. This means the shearer can shear more sheep through less effort, and there is more wool in the fleece lines instead of under the table as locks."

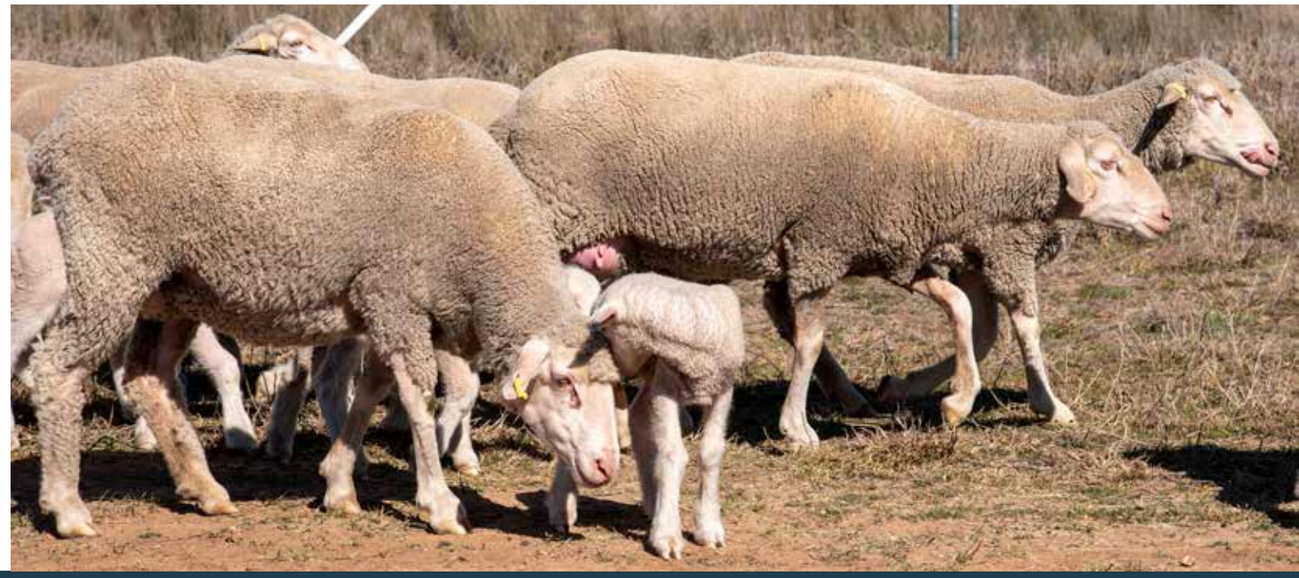
Warren Long
Shearer/contractor, Wellington, NSW

In addition, SRS® Merinos have excellent muscle patterning and fat reserves and therefore bounce back quickly after drought, pregnancy and lactation, saving a fortune in supplementary feeding costs.

5. Shearing twice per year

Due to the significant increase in fibre length that is typical of SRS® Merinos, most flocks are shorn three times in two years with some now shorn every 6 months. The sheep reach fleece lengths of 80 to 100 millimetres as demanded by customers and fleece weights of 4 to 5 kilograms in this time. More frequent shearing has a number of advantages that impact profitability including increased yield and improved tensile strength.

Figure 3 (below): *SRS® Merino ewes with plain breeches and non-mulesed*



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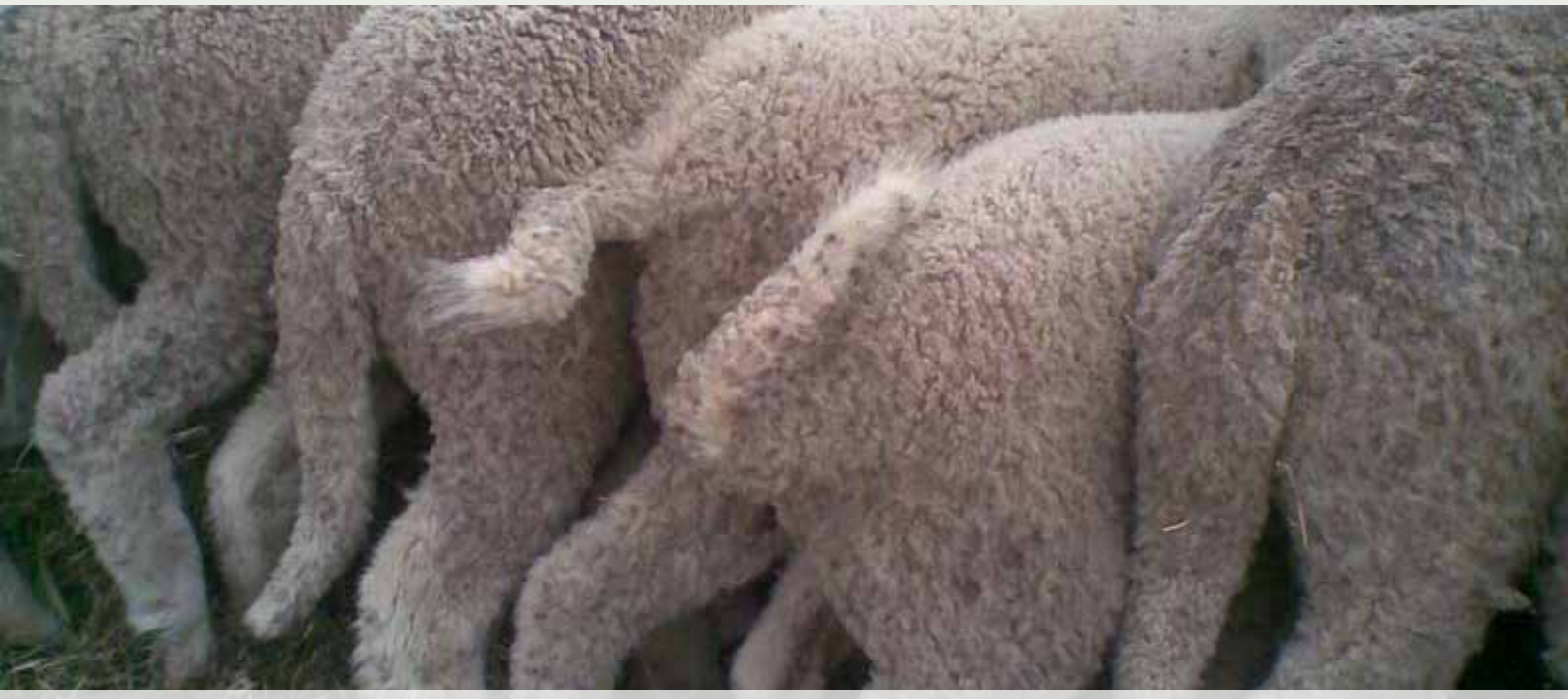

Figure 4: *SRS® Short Tail Genetics (two animals in the centre).*

6. Have more lambs and rear more lambs

SRS® types are bred for a calm temperament, high milk production and instinctive maternal bonding to enhance lamb survival. Commercial producers using the SRS® Breeding System have seen major improvements in survivability and reproductive fitness across a wide range of Australian environments, from the Snowy Mountains of New South Wales to to Winton, 180 km further north of Longreach and more. Weaning percentages of over 120% are achieved regularly *(see Table 1)* and go as high as 160%. Traditionally bred Merinos usually wean between 75 to 90 % of lambs.

7. The genetic solution to mulesing

SRS® Merino sheep provide the genetic solution to mulesing. 14 SRS® Studs and over 500 commercial producers of plain-bodied rams each year with wrinkle free breeches *(see Figure 3)*. Most commercial flocks can begin to phase out mulesing in 3-5 years by using SRS® Genetics and following our breeding principles.

The Next Frontier

Following on from the pioneering work of breeding naturally short tailed sheep by Dr. David Scobie and co-workers in New Zealand, a similar project started at Parkdale SRS® Merino stud, Dubbo, New South Wales, Australia, three years ago. The New Zealand work showed that naturally short tails is one of the easiest traits to breed in sheep. It is highly heritable (0.84). This means that no tail docking is needed. At Parkdale, large numbers of Merino rams and ewes with naturally short tails have already been bred. *Examples are shown in Figure 4.*

Contact Us

For more information on the SRS® Breeding System or sourcing SRS® Genetics please contact: SRS® Business Co-ordinator - 0428 569 639, admin@srsgenetics.com.au