LEAHCIM NEWSLETTER

Accredited Brucellosis Free

Newsletter No.19





July 2021

White Suffolks & Poll Merinos





Welcome

Leahcim has seen two changes since last years newsletter, Luke and Tara have had a baby boy, Bruno, and Neville Krieg has joined our workforce. Neville has worked and lived in the area for over 30 years and has been a massive asset since starting with us in November.

Hummocks Station caravan park and accommodation has exceeded our expectations and the spinoff for local business has been extremely rewarding.

Rosemary has been working over the last 18 months on her new venture "Leahcim Wool - Farm to Yarn to You" which will have its first official display at Bendigo Sheep and Wool Show.

The challenges of COVID 19 in highly populated areas has highlighted that SA and our rural locations are a great place to live and operate our businesses.

Seasonal variations within the Leahcim properties have been extreme, with the Southeast and the Station being exceptionally good, and Snowtown having the driest four-year period on record. With very good rains from early May all our farms have responded well, and we have been able to take all

of the sheep out of the confinement feeding pens. The challenges at Snowtown have made us aware that environmental management while maintaining stock numbers through dry times, can be achieved with minimal environmental damage by use of confinement feeding in well structured pens and surroundings.

Leahcim have maintained our focus on breeding sheep that are fit for purpose while maximising production, profitability with a strong passion for animal welfare.

This year's feedback from clients has been very encouraging, our moto and breeding philosophy "Breeding For The Future" has helped us and our clients breed sheep that are industry leading genetics and creating a sustainable business for the future.

Breeding sheep to maximise production over many traits is challenging and the first article "Industry selection goals" will show industry results plus the importance of understanding where your breeding goals are focused.

The Michael Family

Andrew: 0418 828 431 Luke: 0417 840 533 Stewart: 0417 817 524 Alistair: 0427 352 639 Email: leahcimgenetics@bigpond.com

We encourage you to regularly check our website for updated information

www.leahcim.com.au

Leahcim's 2021 Calendar of Events

- ★ Australian Sheep & Wool Show at Bendigo Friday 16th Sunday 18th July
- ★ Sheepvention at Hamilton Monday 2nd Tuesday 3rd August
- ★ Leahcim Snowtown Sale Inspection Day Monday 30th August
- ★ Leahcim Snowtown Poll Merino Sale Tuesday 14th September
- ★ Leahcim Snowtown White Suffolk Sale Friday 17th September

Industry Selection Goals

In our 2020 newsletter we had an article "Why selecting Genetics with ASBV's is so important", which covered the performance results from the SA Sire Evaluation Trial that Leahcim 173114 was entered in. He was the only sire that had 9 out of 11 performance results above average, with some entries only having 1 out of 11. The two traits that 173114 was not above average for was GFW (greasy fleece weight), which he was average and FD (Micron), which he was .2 of a micron above the average. 173114's results in this trial replicate his performance within the Leahcim flock with no surprises. With the latest follicle density work undertaken at Leahcim his performance matches his follicle density. Having a balanced breeding objective or goal, that maximises production with profit in the most efficient manner is Leahcim's selection goal.

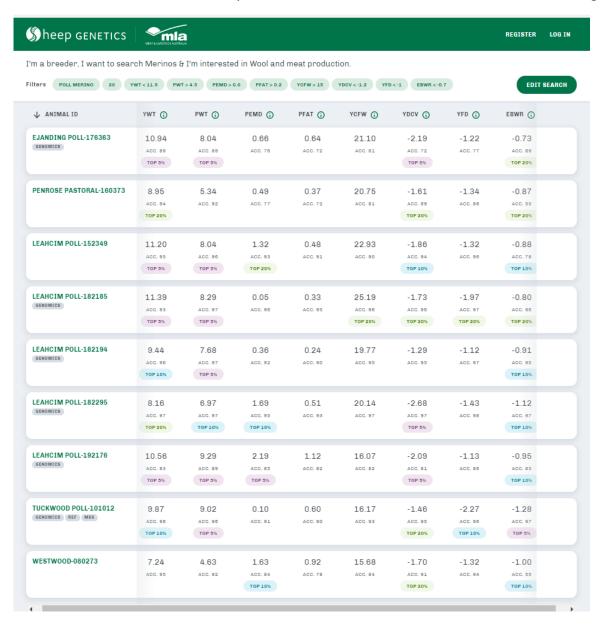
Below is the selection criteria we entered into Sheep Genetics that we felt should be a reasonable breeding selection goal for the merino industry. These are sires with 20 progeny or more within Sheep Genetics.

	YWT	PWWT	PEMD	PFAT	YCFW	YFDCV	YFD	EBWR
ſ	<11.5	>4.5	>0.0	>0.2	>15.0	>-1.2	>-1.0	>-0.7

The selection goals set out above would produce progeny that have a great balance for meat, good fleece weight, low micron (below 18.5 micron) and high quality wool on a sheep with moderate mature size, lambs that would have excellent fitness and not require mulesing.

When using the Merinoselect search tool in Sheep Genetics the table below shows the group of 9 sires available within the whole Australian Sheep Industry having 20 progeny in the 7th June analysis.

Of the 9 sires, 5 are Leahcim sires, with 3 sired by Leahcim sires, and the other one sire has Leahcim as the grand sire.



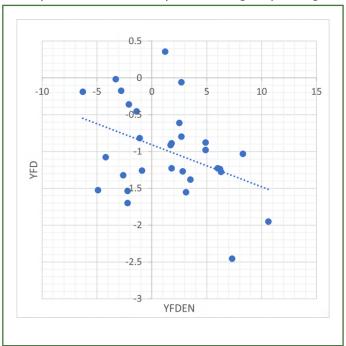
The Leahcim sires; 182295, 182194 and 182185 will have a large number of progeny presented for sale this year. These three sires have been extensively used by leading studs throughout Australia by the way of Al. Leahcim 192176 was used as a ram lamb and will also have progeny available this year. Leahcim 152349 was sold to the Marin family in Chile.

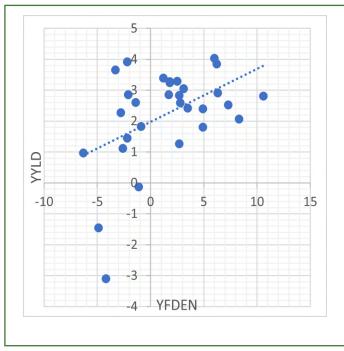
Breeding More Fibres to Increase Quality & Quantity

The information below is based on the Sires of the 2015-2019 born animals. This group of animals were selected because of their high Accuracies (85% or better). 30 sires are used in this data set, all having 75 progeny or more, of which at least 90% have had wool and carcase data collected.

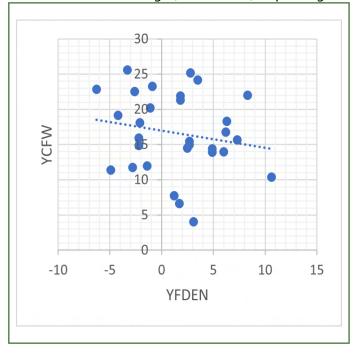
We have conducted over 1300 sheep skin biopsies over the past 4 years, 1000 of which in the past 2 years, this data has then been submitted to Sheep Genetics to generate a breeding value for Follicle Density represented as YFDEN.

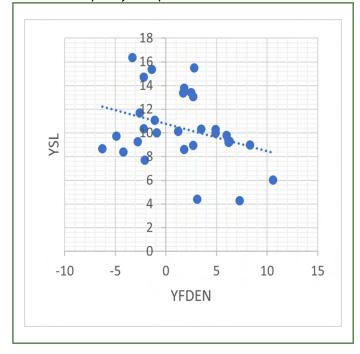
Previous research undertaken by the CSIRO indicated that there is a strong correlation between increased Follicle Density and increasing yield and decreasing micron. This is also what we have found with our own research. It should be noted on the Yield graph how there are no animals that fit in the bottom right quadrant, indicating that high Follicle density will almost certainly result in higher yielding wools.





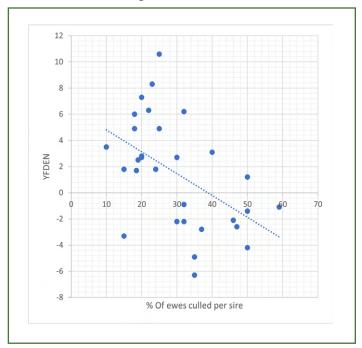
There is also a negative correlation to Staple length, if you only selected for YFDEN you would shorten the wool length, resulting in a slight negative CFW, based on reducing fibre diameter and fibre length. Selecting genetics that are positive YFDEN and above average (> YSL +10.5) staple length will maximise wool quality and production.





An interesting graph is the culling rates compared to Follicle Density, having the highest trends of any. We believe there are 2 reasons for this based on our observations:

- 1. Higher follicle density sheep have a much whiter, well-structured wool, thanks to the higher secondary to primary ratios, and in turn lower swint levels in the wool. This enables the wools to withstand environmental variations much better. We believe if we had undertaken a wool colour score on all our sheep, it would have a strong correlation to follicle density.
- 2. Sheep naturally have follicle breakdown each year (CSIRO research suggested 5% to 10% annually) if animals start off with low follicle density you would expect lower adult fleece weights.

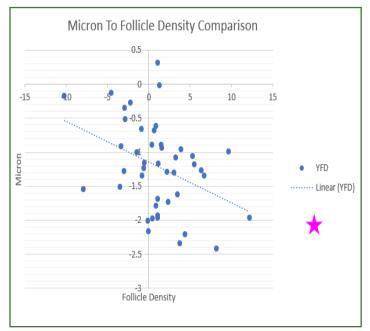


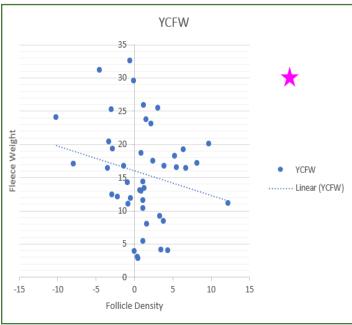
Nearly all these sires would be trait leaders for reducing breech and body wrinkle and carcase traits, so wool quality and production would be influential with the culling %. There is also a slight negative correlation with breech cover and increased follicle density, it is important to keep this in mind if bare breech is a selection criteria.

There are no correlations, either positive or negative with follicle density and the following traits: Growth, Fat, Muscle, Breech and Body Wrinkle, Coefficient of Variation, Standard Deviation, Shear Force or Intramuscular Fat. Leahcim 162058 is a great example of a sire with high follicle density (+8.3 YFDEN), great wool ASBV's and is a trait leader for nearly all the carcase traits (Top 5% for growth, dressing %, shear force, intermuscular fat, plus positive 1.2 for fat and muscle ASBV's.

The pink identification on the graphs of ewe 182722 (daughter of 162058) indicates how much scope for genetic gain is available within our gene pool. The parameters where 182722 sits in these graphs shows that as an industry we still have areas where outstanding improvements can be achieved.

	YCFW%	<u>YFD</u>	<u>YFDEN</u>	<u>YWT</u>	<u>SF5</u>	<u>IMF</u>
162058	22	-1.1	8.3	10.8	-3.28	0.62
182722	31	-1.7	20.9	8.7	-0.61	0.42





In conclusion, measured follicle density is a great tool to identify animals that will help us maintain a highly productive animal with a high value meat and wool product, particularly as Australia heads to a non-mulesed animal. It has helped us understand what influences fleece weight. This being Fibre Diameter, Fibre Density, Fibre Length and Surface area. It is easy to breed a wrinkly sheep or one with long staple and higher micron to maintain fleece weight, but our research has shown there is a better way forward. This is not where we see the future of the industry. We see it as a quality product, produced on an easy-care animal that meets the ethically managed requirements of our evolving consumers.

How COVID 19 Has Helped Fast Track DNA Testing

With the spread and gene mutation of Covid 19 throughout the world, tracing and identifying the virus using genomics sequencing has become a major priority to managing its spread and impact. When Andrew was at beef week in Rockhampton, Ben Hayse (one of Australia's and world leading researcher on Genomics) presentation explained how the time frame for testing genomics of the different strains of the Corona virus has been reduced from 2 days to 15 minutes.

The other change is that a tissue sample can be placed into a handheld genomics tester about the size of your mobile phone to get these results. Within 2 years it is hoped that we could have a handheld genomics testing unit to test our sheep's DNA sequencing thanks to the advancement of genomics testing due to Coronavirus. This could be a real game changer for the use and adoption of DNA testing within the livestock industry. Imagine the improved time to trace your sheep genes for identification and production.

Leahcim Confinement Management Practices

Over the last few years confinement feeding has become an important management tool to preserve ground cover while maintaining our stock numbers. With a decline in rainfall and summer dry matter over the last four years at Snowtown, adjusting our grazing practices has been essential.

Some confinement feeding is undertaken to enable farmers to increase their cropping area which is not the case at Leahcim. Leahcim uses confinement feeding to reduce environmental impact, weight loss and stress on the animals that are left grazing in large paddocks.

Our confinements pen are small, going from 2500 square metres to 10,000 square metres with shade, great water availability, feed, and easy access to handling facilities. It is extremely easy to maintain body weight while conserving ground cover over the farms when confinement feeding is undertaken. Mating sheep while in confinement has been successful, especially with ewe lambs.

Sheep Industry Workshop

On the 9th of April Leahcim, in partnership with Livestock SA held a sheep industry workshop at Hummocks Station. The day was a great success with 120 people attending, hearing some great presentations from Australia's leading scientists and industry representatives. The video of the whole day or individual presentations is available on our website.

The article below from Professor Mark Hutchinson is a short article that captures some of his presentation. We would urge you all to take the time to watch Marks video from the workshop to get an insite into how the livestock industry manages animal welfare and pain in the future.

The future of livestock farming – measurement enabled precision interventions

Pain in animals is an experience that we are unable to reliably diagnose or quantify. Even when animals in pain are identified we are still left ineffective in verifying the success of interventional treatments. These limitations arise from our inability to objectively measure pain.

In livestock production, acute pain is experienced due to management procedures, such as castration and tail docking, injuries from fighting or housing conditions, diseases such as mastitis or other infections, and at time of birth. These acute injuries can transition into the persistence of pain, which has a profound impact on the wellbeing and resilience of the animal that cause increased costs and reduced productivity.

Unlike some forms of acute pain which are protective This transition to persistence of pain serves no benefit to the animal. Therefore, prevention, diagnosis and treatment of this persistence of pain is critical. For example, soon after birth pain can interfere in mother-young bonding leading to malnutrition, infection or even death of the newborn. Persistence of pain throughout life is a chronic stressor for the animal, leading to reduced food intake and hence lower daily average weight gain, producing less volume and lower quality product.

A growing consumer driven pressure is also changing the markets available for sale of livestock products, which may limit the access of products to premium priced markets serviced by welfare-sensitive companies. Therefore, there is a pressing need for tools that can objectively diagnose and measure pain in animals, with associated innovations in pain treatment options. Such innovations in pain measurement and treatment will directly benefit the afflicted animals and the industry as a whole by improving productivity and product quality.

An example of a potential trigger for the classical presentation of a persistence of pain in animals is amputation. Whilst on the decline in livestock, surgical removal of body parts is still widespread. This practice itself causes pain, resulting from the resection (cutting) of peripheral nerves and the possible formation of traumatic neuromas and causes significant ongoing sensitisation at the level of the brain and spinal cord to mechanical stimuli. Light touch transitions to a painful response. Imagine grass blades running across sunburnt skin. The parallel amputation and the associated changes in brain and spinal cord function in humans is considered to be significantly painful. We cannot ever know what an animal feels or thinks and therefore we avoid anthropomorphising these states.

Instead, we can using reductionist scientific approaches

examine at the molecular and cellular level events and anatomical structures of the sensory system in animals, and using comparative histology and classical biology we can infer possible functional consequences. Using these approaches, it is possible to see the hallmarks of chronic pain in animals. This can be seen in cellular adaptations in both the injury site and within the brain and spinal cord. Importantly, these same changes are associated with the phenomenon of residual stump pain and phantom limb pain in humans. This is a prevalent experience as painful symptomatic neuromas following amputations are observed in up to a quarter of amputees.

However, the solely neuronal or electrical view of brain and spinal cord function has profoundly changed. We now view the brain and spinal cord as capable of immune functions, literally speaking the molecular language of the immune cells that float around our body. This has triggered a revolution in the pain field, as pain which was one though of as solely a neuronal wiring problem has given way to an integrated neuro and immune hypothesis of exaggerated pain. Glial cells (immune-like cells of the brain and spinal cord), and peripheral immune cells circulating through the brain and spinal cord are now understood to be integral to creating and maintaining the neuroexcitatory states that underpin persistent pain. This has immense implications.

Firstly, all the nerve block agents we use to "stop pain" may work to stop the "electrical signalling" of injury, but do nothing to stop the immune language of pain which is able to bypass all nerve blocks and signal directly to the brain and spinal cord to establish the foundation of chronic pain. Interestingly, the greater prevalence of exaggerated pain in females also appears to have its origins in this neuroimmune involvement, through estrogenic priming of immune functions. We know that male and female immunology differs with females more likely to have autoimmune disease. We also know that women experience up to 12 times the rate of chronic pain. Hence, the persistent pain problem, and the neuroimmune contributors are likely to be even more relevant in livestock owing to the predominance of female animals in production.

Therefore, it is critical to understand this immune to brain and brain to immune communication between the peripheral immune, spinal immune and brain immune systems which create and maintain chronic pain states in livestock. Moreover, while neuronal processes are critical for the conduction of heightened pain, there is an anatomically distributed immune signal that triggers conduction of the exaggerated pain response. This breakthrough provides us now with the first opportunity to diagnose pain through a blood sample in livestock.

To date, the translational benefits of these discoveries in the fundamental neuroscience of pain have passed directly to the human clinical setting, without changes in animal husbandry practices. This is a critical missed opportunity. This is why field days like that hosted by the Michael's and the Leachim property are so important for the future of the industry. We can't wait decades for innovations to spontaneously occur. We need to cultivate specific opportunities, and the relationships that develop from them, to allow for the tough questions to be asked and breakthrough ideas to be tested. If we can do this more in the future, then streams of research in neuroscience, immunology, pharmacology and biophotonics will logically emerge to equip the Australian livestock industry with world-first platform of technologies that will be able to, for example objectively quantify pain in livestock. These new technologies will then be used to test new drug targets for their ability to block the persistence of pain, underpin productivity gains and an iterative improvement in production and business practices.

Worm Egg Counting

Worms are currently estimated to cost the sheep industry in Australia \$260 million per annum. Previously our management did not enable us to take faecal samples to gain accurate worm egg counts. We had been holding out hope that Gene Sequencing would identify worm resistance and our GENOMIC test would give us WEC results, but up until very recently the gene has not been identified.

In 2020 we moved our lambing forward around 6 weeks for our Poll Merinos, this enabled us to drench lambs at weaning, run them in an environment for 100 days where they would get worms, then we could attain good data. Previously the lambs were weaned and trucked to Snowtown where the environment does not allow for Worm Egg counts to get high enough for any accuracy. It has been a great learning curve, and the results are staggering. To give an example, in a mob of 500 rams the average count was 1700 eggs per gram. The top performing sire of this contemporary averaged 600, whilst the worst averaged 3000.

A real challenge is giving the sheep this set back, then having to get them back up, in particularly the ewe lambs which were then joined at 8.5months of age. It is a great test to see which genetics are coming to the top.

Our AI program for the 2021 drop has included one of the highest performing Poll Merino rams for YWEC in the industry that has extremely high accuracies. He has been used along side our top performing sire, which will then give us great linkages and see where we sit within the industry.

Just so happens that the Gene Marker was identified once we entered 1200 worm egg counts corresponding to animals that had the GENOMIC test. Coincidence, maybe. Because it is a work in progress, YWEC will not be displayed on sale day or in catalogues. However, we are more than happy to supply a spreadsheet with any data people request.

2020 Sales

Classings Classic

3 x Poll Merino Rams were sold at the Classings Classic Sale averaging \$8500. The top price ram sold for \$13,000 to Paul & Jenny Goerling, Lukin Springs, Boyup Brook WA.

Leahcim Poll Merino

Sale Summary

	2020	2019				
Offered	250	247	Thank you to all			
Sold	250	243	clients for purchasing			
Тор	\$26,000	\$8,400 (x2)	Leahcim Genetics.			
Av	\$2,688	\$2,419				



Pictured with the \$26,000 top priced ram at the Leahcim Poll Merino ram sale are agent Tom Allen, Matt Ridgway (Ridgway Poll Merino Stud), Ray & Brad Schroeder (Gunallo Stud), Alistair Michael and auctioneer Gordon Wood. The ram was bought in partnership by Ridgway & Gunallo Studs.

Leahcim White Suffolk

Sale Summary

	2020	2019	
Offered	120	132	Thank you to all
Sold	114	123	clients for purchasing
Тор	\$3,600	\$2,400	Leahcim Genetics.
Av	\$1.099	\$916	



Pictured with the \$3,600 top priced ram at the Leahcim White Suffolk ram sale are agent Tom Allen, purchasers Sam & Alan Baker from Nantawarra SA, Alistair Michael and auctioneer Gordon Wood

Poll Merino Sale Teams

As we continue to fight production traits that are antagonistic, it's a matter of finding outliers and improving our genetics year in year out. We find it also important to ensure we move every trait forward in the right direction in balance with one another. We know that we could push fleece weight up 3-4 % but that would negatively impact on carcase attributes. Similarly, we could drive fat & muscle simply, but that would be at the detriment of wool production. The key is balance and moving the commercial producer along with us. This can be seen below in the table; this is the sale team averages of the Poll Merino rams we will offer at the 2021 on-property compared to last year and 9 years ago.

Sale Year	<u>YWT</u>	YFAT	YEMD	YCFW	<u>YFD</u>	<u>YSL</u>
2021	9.5	0.9	1.0	21.5	-0.9	12.9
2020	8.8	8.0	0.9	19.7	-0.8	12.5
2012	4.8	0	0.1	12.5	-0.7	9.5

2021 Sales

On the 31st August from 10am to 3pm, Leahcim will be holding an inspection day of our Poll Merino and White Suffolk sale rams.

Both the Inspection Day and Ram Sales may be subject to changes with COVID 19 restrictions, but we will keep everyone informed as the events get closer.

Leahcim Poll Merino

The table below shows the sires that will feature in the 2021 Leahcim Poll Merino sale:

						YFD-			
<u>Tag</u>	<u>YWT</u>	<u>YFAT</u>	<u>YEMD</u>	<u>YCFW</u>	<u>YFD</u>	<u>CV</u>	<u>YSL</u>	EBRW	<u>DP</u>
173088	8.9	1.6	2.4	25.5	01	04	9.3	-0.8	145
182295	8.2	0.5	1.9	20.1	-1.4	-2.7	11.5	-1.1	148
182194	9.4	0.5	0.5	19.8	-1.1	-1.3	8.5	-0.9	158
182259	9.0	0.4	0.1	35.1	-1.2	-1.6	13.4	-1.0	159
173721	14.5	1.3	2.2	21.5	-0.3	-1.8	10.3	-1.1	167
182185	11.4	0.7	0.0	25.2	-2.0	-1.7	12.9	-0.8	167
163266	13.3	0.8	1.5	19.9	-1.6	-2.0	15.0	-1.2	174

Leahcim White Suffolk

The table below shows the sires that will feature in the 2021 Leahcim White Suffolk sale:

<u>Tag</u>	wwt	PWWT	PFAT	PEMD	LMY	IMF	SF5	TCP
180117	12.8	20.0	-1.1	3.0	5.7	-0.6	1.6	169
180428	11.4	17.9	-0.3	2.7	4.0	-0.4	3.7	150
190268	9.0	14.6	-0.1	2.5	2.8	-0.1	-1.3	149
190309	11.5	17.5	-0.5	2.0	3.7	-0.3	0.4	153
190313	11.0	18.3	-0.6	2.1	4.3	-0.4	1.0	155
F170761	11.8	19.0	-0.4	2.4	3.1	8.0	-3.1	161
S170147	9.7	15.8	-0.1	4.5	5.1	-1.1	-0.1	164

= Top 20% of Industry

= Top 10% of Industry

Leahcim Wool - Farm to Yarn to You

In last years newsletter we told you about sending our first bale of wool off for processing. The processed wool arrived back to our farm the week before Ram Sales 2020, 9 months after leaving the farm in the bale.

It was with great anticipation I set about to open the first box to assess what the quality of this wool was going to be like. After many years of Leahcim breeding Poll Merino Sheep, using every bit of available technology, to produce sheep that are ethically and sustainably managed, and still tick all the boxes for meat and wool quality/traits, I was hoping I wasn't going to be disappointed with what was inside.

My first thought was "It looks good" Secondly, I put my hand on some wool on the cone – "It feels particularly good". Then once I started weaving and hand dyeing the spun wool, all I can say it is so soft and beautiful to handle and takes the dye colours so well.

For the last 30+ years, Andrew's passion has been to breed the best sheep possible. So, this is what we have spent most of our time trying to achieve. Many hours have been spent at the kitchen table laying out the plan on how this is going to come to fruition. Dr Jim Watts played a big part on leading us in the right direction.

When I started to see these beautiful soft, silk like wools on sheep in our sheep yards, my craft mind was trying to work out how I take this wool off the sheep and produce something with it to see how good it really is. I'm not new to using yarn but had very little idea on how to process it. So, Tracy from Knit Spin Weave Shop in Clare SA steered me in the right direction. And all I can say now is I'm so excited with our end product and just wish Dr Jim Watts was here to see it.

Our first real display of our Leahcim Wool products will be at Bendigo Sheep and Wool Show, July 16th – 18th, where we will have some for sale. I will be taking Top/ Rovings, skeins of undyed 4ply & 8ply, and a small amount of hand dyed yarn + some of my hand woven scarves. Please check out our Leahcim Wool – Farm to Yarn to You Facebook page for updates on what is happening with Leahcim Wool.

Rosemary Michael



Bruno Loxley Michael



On 28th January 2021, Bruno Loxley Michael joined the Michael family. Luke & Tara are now proud parents to a very happy, smiley and wonderful 5 month old, who is adored by us all.



Andrew, Rosemary, Luke, Stewart & Alistair Michael 'Leahcim', Snowtown, SA

Andrew: 0418 828 431 Luke: 0417 840 533 Stewart: 0417 817 524 Alistair: 0427 352 639

Email: leahcimgenetics@bigpond.com

www.leahcim.com.au

Hummocks Station Tourist Park & Function Centre

Tel: 0427 243 348

Email: stay@hummocksstation.com.au www.hummocksstation.com.au