

Gulbali Stories — Sheep Heat Stress Supplement Trial

Joining sheep in confinement

Guest: Dr Susan Robertson & Jim Meckiff | Host: Christine Storer

Welcome to Gulbali Stories, where we share inspiring tales of innovation, resilience and sustainability in agriculture, water and the environment from Australia and beyond.

Christine Storer

Welcome everyone to a podcast on the results of experiments for the Climate Smart Agriculture Program under the Natural Heritage Trust. These results were presented at MerinoLink workshops in New South Wales and Victoria in 2026, and were focused on making sheep farming more sustainable, particularly with reduced pasture availability in terms of drought and after fires, in our variable climate. And we've got results from our livestock expert Susan Robertson from Charles Sturt University, and some commentary on the questions raised by sheep production advisor Jim Meckiff from JM Livestock. Susan, tell us about the experiment.

Dr Susan Robertson

Yeah, thanks Christine. So, this was the third study that we did. So, this was joining ewes in confinement. So why is that important? Because during drought, or other periods of insufficient pasture, it's usually ewes that go into confinement — they're the ones that you want to retain rather than sell, and so are being dry, and this is a period when you're going to be joining ewes. So, understanding the impact of joining in confinement on performance is actually really important. Of course, you know, lamb production is a large part of our income from sheep production.

So, what I particularly wanted to do with this was — there's not a lot of comparative data around to tell farmers what might be the best practices. And so, you know, you ask 10 farmers, they're all doing something different. So, what I wanted to do in this study was to test some of the common practices that farmers might be using, so that we can accurately assess the performance and come up with recommendations about what level of performance you might get and what that might cost.

So, the question for this study was: does what you feed alter pregnancy and scanning rates for ewes? So, this again was a properly replicated study — three replicates times four treatments — and we joined 1,200 ewes in November 2025. There were four treatments. So, we used a pretty standard confinement ration, which was 80% barley grain and 20% straw, and that was fed at maintenance level, which is around about 8.9 megajoules of energy per ewe per day. In comparison, we used a barley-based ration, but only 60% barley, increasing the straw to 40%. Why? Because there's a lot of farmers using large proportions of straw, or in fact ad-lib straw, and straw and other roughage being quite expensive during drought, this might be a costly ration. So, we really wanted to see if there was any impact on performance from 20% versus 40% straw.

Treatment three and four were short-term flushing — one with lupins, one with corn — because basically lamb production is really important in terms of profitability. We know

flushing works out in the paddock; can we actually improve the performance of our confinement-joined ewes by a short-term flushing to minimise costs and make more money in the long run? So, both those flushes were only 14 days. They were fed at 150% maintenance, so as our base ration of 8.9 megajoules, it increased that by 50% with either the lupin or the corn. So effectively we're feeding around about 340 grams per ewe per day of either the lupin or the corn for that 14-day flushing period.

Jim Meckiff

Great work there. In the experimental design, it's a very common practice to see ewes joined at this time of the year in confinement — out-of-season joinings, pretty normal practice in the area of the Riverina, southwest slopes, where the trial was run. Ewes were introduced prior to being locked up in the containment area — they've been in stubbles or on supplementary feed grain prior to going into the containment area, so that's normal practice there, everything was inducted onto the grain that they were on. Frequency of feeding 3 times a week after induction, that's pretty normal practice as well, and I guess the ad-lib component of the roughage is very common in the district, so trying to get a better gauge on how much roughage, or how little roughage, we can get away with was a really interesting part of this research. There's a lot of information presented at last year's workshops and also in our earlier podcasts, looking at induction, different rations, containment area set-ups, and your animal health whilst in containment, so I'd like you to go back and check those [podcasts](#).

Christine Storer

and also on the websites from [MerinoLink](#) and [Gulbali Institute](#).

Dr Susan Robertson

Yep, now the next thing we need to think about was, or when did we flush ewes. So basically, if you were joining during February to June, which is the natural breeding season for ewes, you would flush for one week before the rams go in, into the first week of joining, so a two-week, 14-day, flushing period.

Sheep are seasonal breeders — so if you were then joining in the October to early January sort of period, ewes aren't actually cycling at that time, and therefore the time you actually flush them needs to change to actually match the peak mating period. So, for October to January-type joinings, you'd put the rams in at day zero, you'd start flushing at day 12 after the rams go in, and you'd feed right through for a two-week flushing period, right through to day 26 after the rams go in. If you want to extend that for a further week, you might get a better result, but it's still a short-term flush.

If you were using teasers, like some people do for that out-of-season joining, you'd flush at the same time, so you'd put the teasers in for two weeks, the rams go in at day 14, but similarly to the other example, we'd still start flushing from day 12 after the teasers go in, and flush for two or perhaps three weeks. Just remember that the time you flush does vary between in- and out-of-season joinings.

So, for this experiment, they were joined out of season, and we used quite a short joining period using the ram effect, and flushed for only 14 days at the peak of the mating period. So, the rams went in on the 13th of November, we started flushing on the 25th of November, ended flushing on the 8th of December, and the rams came out — with a very short joining, not commercial practice, a short joining for experimental purposes — from about the 17th of December.

So, the results — you can see on the graph on the [website](#) — so to start with, the percentage of ewes that were not pregnant after the joining was around 21 to 25%. That's high because we didn't use a typical eight-week joining. If we'd extended that joining to normal commercial practice, we would expect over 90% of ewes to get pregnant. If we then look at the number of fetuses per ewe across all the ewes that were joined, we can see that

we've had 96% fetuses per ewe in the control treatment, so the 20% straw treatment, and 103 fetuses per ewe in the lupin flush treatment. So, a 7% increase from that short-term flush — that's quite a good result. If we'd extended the flushing for another week, we'd expect a better result again.

So, the take-home messages from this study is that certainly joining in confinement, we can get good scanning results while protecting our pastures from overgrazing. So, while the results may look a little odd because we had a very short joining in this trial, we've certainly done previous trials where we've had well over 90% pregnant and very good scanning results, and certainly a lot of producers are joining in confinement with very good scanning results.

It's really important to remember that in these results, the 20% versus 40% roughage had no impact on pregnancy rate or the number of fetuses per ewe. So, what producers really need to think about is, well, what's the cost of that ration compared to the lower roughage ration? You know, if you're feeding these ewes long-term, cost that up, and so if there's no actual production benefit and it's more expensive for roughage, you're better off with the other 20% roughage diet.

Christine Storer

Just to explain why you went with 20% and not the minimum recommended 10% — that was a question that was raised.

Dr Susan Robertson

Yeah, 10% is the minimum recommended roughage proportion. Certainly, we have in prior studies used that level. 20% is just that little bit safer in terms of acidosis risk — so, you know, all these studies are done under animal ethics approvals — so just a little bit safer, without adding a large amount to the cost.

So, we did use a 14-day lupin flush in this, so it was only around about 340 grams per ewe per day, and it was pretty clear that this is likely to increase the number of fetuses produced per ewe. What you need to think about as to whether you want to flush or not is whether you want more twins. So, whether you personally want more twins will depend on when you think that drought might break, or when you think you're going to have feed out in the paddock that's going to reduce your feed costs. So, twin-bearing ewes have a higher feed requirement — they will take more feed than a single-bearing ewe. You also need to think about the survival of the lambs when they're born, so survival of singles is always higher, although some people get quite good survival rates in their twins. If you're going to get very poor results in your twins in terms of survival, you'd be better off not flushing them. Also, it would depend on prices — so grain prices versus, and particularly for whatever you're flushing them with, versus the price of meat. So, when lamb prices are high, cost of grain is low, it will certainly pay to get more twins.

The other real point from this study is to remember that flushing needs to target seven days before the peak mating period and at least seven days into the mating period — that's short-term flushing. You don't actually need to flush for, you know, six weeks pre-joining, that's not very cost-effective. You also need to remember that the timing of the flushing needs to differ between spring/summer joinings and those in the natural breeding season, which will be February onwards.

Jim Meckiff

Thanks, Susan. A couple of other questions that were raised throughout the workshop series is: does barley have a flushing effect? And although you'd think a good-quality cereal grain would keep your ewes in better condition and give them more energy, it didn't seem to have an effect and doesn't have an effect on increasing conception rates or fetuses. And we could actually also have a detrimental effect by acidosis from cereal grains.

Another question: would flushing work in crossbred ewes? Well, absolutely — keeping in mind that nutrition and condition score are the primary drivers of fertility, but a flushing response will be achieved from those ewes. 500 grams per head per day may be the maximum that we would like to go to. Previous work has indicated that there's no extra benefit from giving them a kilo or more — 500 grams per head per day would be enough.

When it comes to our rams, flushing of your rams — provided they're fit and healthy and in a target condition score of three to three and a half — definitely we'll have an increase in sperm production, scrotal circumference, but that needs to take place six to seven weeks pre-joining. So it's a lot more lupins — half a kilo per head per day for seven weeks pre-joining — as a requirement for your rams.

Take-home messages, I guess, for commercial producers: joining in confinement can be done successfully. There's no extra benefit — other than happier ewes — from more roughage, it's just an extra cost. There's no benefit to reproduction rates, so a 20% roughage component is enough to meet those roughage requirements, keeping in mind that if you go above that, straw intake and roughage intake is going to increase and be very costly. Value that straw, value your metabolisable energy that you are giving — don't underestimate what value is in that straw and that roughage. And great results to be achieved from joining in containment — no reason not, preserve your pastures. Look after your livestock, be in control.

Christine Storer

Thanks for that. And these research results came out of questions from MerinoLink workshops last year, so it's great to see the producer questions being answered. There will be more results coming through, so keep an eye out on the [MerinoLink](#) and Gulbali Institute [web pages](#) and further [podcasts](#), and we'll talk to you soon.

Thank you for listening to Gulbali Stories. Discover more about research and partnerships at the Gulbali Institute at Charles Sturt University by visiting our website or following us on social media at #GulbaliInstitute. We look forward to sharing more stories with you soon.

Study 3. Joining in confinement

Does what you feed alter pregnancy and scanning rates?

Lupin flush increased scanning rate (fetus/ewe %) by 7%.

