Final report

PDS – Exclusion Feeding of Lambs in Drought

Project code: L.PDS.2001

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Abstract

Exclusion feeding of lambs is a practice that can improve liveweight gains of lambs in drought conditions. A producer demonstration site project was designed to demonstrate exclusion feeding on multiple properties in southern NSW. Producers split a small mob of ewes and lambs into two separate mobs, a control mob and a trial mob and exclusion feeding was introduced for the trial mob only. Overall, a 1.93kg/hd weight in the trial mob was achieved as an average over the 3 years which has a net benefit of $2.32/hd. However, the second two seasons were not drought conditions and the full benefits of using exclusion feeding were not apparent because of the high pasture availability. This means that further work in drought conditions is necessary to increase adoption. However, producers see the potential of the technique and discovered other benefits such as earlier joining of lambs because of faster weight gain.

Executive summary

Background

During extended dry periods, introducing lambs to feed earlier using exclusion feeding has been a proven strategy to increase growth rate in lambs which results in lambs reaching a target post weaning weight earlier. This can assist with both lamb and ewe survival and increase profitability through increased weight gains. This will benefit mixed farmers throughout NSW who would traditionally only supplementarily feed stock by trail feeding both ewes and lambs together. The results of this project where select producers have introduced exclusion feeding, will help understand how higher weight gains can be achieved and what are the barriers to adoption.

Objectives

- Demonstrate the productivity and efficiency benefits of introducing lambs to grain early through exclusion feeding prior to weaning
- Measure the increase in skills and knowledge in relation to exclusion feeding
- Identify and capture any barriers to adoption of exclusion feeding systems

Methodology

Briefly outline the methodology that was used (2-4 sentences; dot points acceptable).

- 4 producers split a mob of ewes and lambs at marking into two mobs approximately 200 head of ewes in size. A control mob and a trial mob. eID tags were placed in all lambs to track individual performance.
- The trial mob had a feeder and exclusion feeding system such as Gaynor creep panels introduced.
- The weight of lambs was measured for both mobs at different stages to track weight gain up until they were sold.
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Results/key findings

Overall, the results showed that the control mob had increase in weight gain on 1.93kg or 2 grams per day over 97 days average. The economic benefit of this would mean that the gross margin of the trial mob would improve by $8.98 per head. These results were communicated through extension material such as research reports and case studies. All core producers have indicated that they would continue to use exclusion feeding if the seasonal conditions are suitable.

Benefits to industry

The main benefit of using exclusion feeding is improved weight gain in lambs. However this has add-on effects such as being able to wean lambs earlier which can aid in ewe health, there is less reliance on under-performing pastures and lambs may even reach a joining weight earlier which could also increase productivity.

Future research and recommendations

The project has shown the potential for further research in this area. This is because as producers are using exclusion feeding there are more benefits being discovered that need to be quantified. There also can be more work done to improve the system to help reduce the labour component of exclusion feeding.

PDS key data summary table

Project Aim:
Example - To increase enterprise gross margins by up to 50% above the traditional base system by implementing X and Y practices on farm.

	Comments		Unit
Production efficiency benefit (impact) Animal production efficiency - kg LWT/ha; kg LWT/DSE, AE or LSU Pasture productivity – kg DM/ha Stocking rate – DSE, AE or LSU/ha Reproductive efficiency – marking %, weaning % Mortality rate (%)	*Increase in LWG of lambs*	1.93	Kg/hd
Reduction in expenditure Reduction in labour i.e. DSE/FTE, LSU/FTE, AE/FTE; Reduction in other expenditure		0	
Increase in income		$8.98	/hd
Additional costs (to achieve benefits)		$6.66	/hd
Net $ benefit (impact)		**$2.32**	**/hd**
Number of core participants engaged in project		4	
Number of observer participants engaged in project		50	
Core group no. ha		12,000	
Observer group no. ha		600,000	
Core group no. sheep		8,000	hd sheep
Observer group no. sheep		100,000	hd sheep
Core group no. cattle			hd cattle
Observer group no. cattle			hd cattle
% change in knowledge, skill & confidence – core	*Exclusion feeding lambs*	80%	
% change in knowledge, skill & confidence – observer	*Exclusion feeding lambs*	50%	
% practice change adoption – core	*Exclusion feeding lambs*	80%	
% practice change adoption – observers	*Exclusion feeding lambs*	30%	.230
% of total ha managed that the benefit applies to	*Exclusion feeding lambs*	50%	
Key impact data			
Delete lines that are not applicable to your project. **Net $ benefit /hd**	**$2.32/hd**		
Net $ benefit /hd	**$2.32/hd**		
Gross Margin / Hd	**$8.98/hd**		

Table of contents

1. Background

Early introduction of lambs to grain and the use of exclusion feeders are proven strategies to maximise lamb production per kilogram of supplementary feed supplied, especially during periods of extended dry conditions (Alcock, D, July 2006 ; White, A & Hegarty, R, 2014). Alcock (2006) reported that exclusion feeding could increase lamb weight gain by 7.2kg compared to non-exclusion feed lambs, with lambs reaching sufficient weight to ensure good post-weaning survival.

However, widescale adoption of these strategies has not occurred in the mixed farming zone of southern NSW. Producers still, typically supplementary feed when pasture is short using feeders or trail feeding ewes and lambs together. In this situation the ewes receive a disproportionate amount of feed and lamb weight gain, weaning times and profitability suffer.

Current severe drought conditions accompanied by high grain and hay prices, shortage of supply and poor-quality pastures have motivated producers to investigate and adopt more efficient feed management strategies. The use of exclusion feeding and/or the approach required to implement it, is not well understood across the mixed farming region of southern NSW.

There is a real opportunity now, created by necessity, to upskill southern NSW lamb producers in the use of exclusion feeding in the mixed farming context and to achieve on farm adoption of this management strategy.

This PDS proposes to demonstrate the implementation of exclusion feeding at 4 sites and capture the impact of exclusion feeding on lamb and ewe performance. The PDS activities and outcomes will be captured in case studies (written and video), field day presentations and technical reports. These will be communicated directly to FarmLink's 300+ members and broadly across the region. Producers will be able to see exclusion feeding systems implemented, monitor and interrogate progress and assess outcomes.

Participating producers will receive active support as they implement and evaluate exclusion feeding systems on their own farm. Actively supporting producers as they adopt new management strategies is a proven approach to achieve longer lasting on farm change and to better inform researchers and advisors of barriers to change at the farm level.

Further, more than 300 other farmers in the region will have direct access to the experiences of the participant producers through tailored communications and extension activities – including case studies, video, workshops and field events. Program information will also be made publicly available so that any interested producer may access it.

The value of this project is the active on farm support extended throughout the trial with producers who may have little or no experience in using the technology or feeding system. As a result of regular visits in the first year and with provision of training, the subsequent years of on farm visits are reduced to critical data collection (lamb induction weight, weaning weight, and 4 weeks post weaning weight), allowing producers to take a more independent role to assess how it works in their system, and later provide feedback on whether it works practically.

2. Objectives

The objectives of the exclusion feeder PDS were as follows:

1. Demonstrate the productivity and efficiency benefits of introducing lambs to grain early through exclusion feeding prior to weaning. - This was successfully completed through the collection of data of the years of the trial.

2. Conduct a cost benefit analysis on 5 properties to determine the economic impact of the use of exclusion feeding (eg: compared to not). - This was completed however, the number of core producers was reduced because of the seasonal conditions and the availability of feed on offer for some produced

3. Measure the increase in skills and knowledge in relation to exclusion feeding for both core and observer producers. - This was completed and is documented in the surveys completed.

4. Measure an increase in producers within the region adopting use of exclusion feeding by the end of the trial. - There has been an increase in knowledge by the region but it has become clear that further work may need to be completed for widespread adoption

5. Identify and capture any barriers to adoption of exclusion feeding systems. - There were barriers identified that have limited adoption thus far but it is likely that these barriers will be overcome once drought conditions return and producers are looking for alternative strategies to manage lambs in drought.

3. Demonstration Site Design

3.1 Methodology

Active participants involved in the exclusion lamb feeder trial will all follow the same methodology to measure lamb weight/weight gain while they are on their dams (ewes) and through to weaning and post weaning in both the control mob (no exclusion) and trial mob (exclusion).

All lambs in the trial will be tagged with an electronic ear tag (eID) so that all relevant information will be recorded against each individual animal in the 2 mobs. 200 ewes is the maximum mob size for each group (control and trial mobs). Both mobs must be twin or single ewes, or an equal mix of twin and single ewes. eID tags for the lambs to be donated by Shearwell Australia.

The lambs will be inducted with an eID tag at lamb marking with their body weight.

Each grower involved will need to have a minimum of 2 feeders and will need portable sheep panels to section off one feeder. The creep panels will be supplied by Gaynor Creep Feeding Panels to the growers for the trial.

If ewes are lambing for a 6-week period and the majority of the ewe's lamb at the end of the first cycle (17 to 22 days) and lamb marking is 2 weeks after the end of the 6-week lambing, then on average the majority of the lambs would be around those 36 to 42 days old (at lamb marking).

The daily energy required by the lactating ewe (50kg twin as an example) is on the decline from a high at 20 days post birth of lamb of 26.8 Mega Joules of Metabolising Energy (MJ/ME). This energy

requirement will rapidly continue to decline to weaning at around 65 days post birth of lamb to 16.7 MJ/ME.

From day 50 post birth of lamb there is a rapid decline in energy required by the ewe, which affects production of milk. At this same stage the young developing lamb is increasing in energy required.

In understanding the declining energy requirements of the ewe and the increasing energy requirements of the lamb is important in understanding when is the best time to introduce the creep feeding system to maximise the benefit of allowing the lambs access to the feeder but not the ewe.

The best time for lambs to have access to the excluded feeders is after lamb marking if lamb marking is 2 weeks after the end of lambing.

To get a successful introduction of lambs onto the excluded feeders, ewes and lambs must have access to the feeders at the end of lambing, so in-fact the ewes are "training" the lambs onto the feeder leading up to lamb marking.

This training method is often referred as "imprint feeding". By introducing the lamb on to the feeder at this early stage, the immature rumen of the lamb will start to develop the essential bacteria needed to breakdown hard feed. This is initially done by the creation of saliva (used to transport down hard feed), which has a high density of bacteria. While sucking on its dams' milk, the lamb's rumen remains "lazy", as milk is a bypass protein and doesn't need to be broken down like hard feed by the rumen. Therefore, there is no environment to create any bacteria in the lamb's rumen while on milk. This initial imprint period is essential to create a "working" rumen in the lamb so when the exclusion feeding system is introduced their rumen has been prepared to break down the grain with their growing demand of energy required which as time goes on the ewe will not meet. *Inset image developing rumen*

The individual timetable is as follows:

- **Trial and Control mobs** of ewes selected and inducted (pre lamb)
- Lambing paddocks identified and pasture assessed (Type and KG/DM/HA
- Feeders introduced at end of lambing to both mobs
- Lambs inducted with eID tag, weighed and identified to mob type (control or trial) at lamb marking
- Paddocks identified and pasture assessed at lamb marking (Type and KG/DM/HA)
- Creep panels introduced to trial mob feeder at lamb marking
- Weaning 4- 6 weeks after lamb marking, both mobs brought in and lambs weighed.
- Paddocks identified and pasture assessed at weaning (Type and KG/DM/HA)
- 4 weeks post weaning, 3rd and final weight of lambs. If any sold before the 4 weeks they will be weighed before leaving farm
- Paddocks identified and pasture assessed at post weaning (Type and KG/DM/HA)

3.2 Economic analysis

Economic analysis was done by assuming the value of lamb sold as dressed weight which was $8.80/kg. The price of the barley grain was also assumed to be $245/tonne. This meant the value of the lambs produced could be calculated and the control and trials mobs could be compared.
The average grain consumption could also be calculated based on the amount of grain that was put in the feeders. This means that a cost of production can be calculated and the efficiency of the trial vs control mob can be measured.

3.3 Extension and communication

Table 1. Extension and communication plan outcomes

Activity	Responsibility	Target Audience	Key messages and must-have elements	Timing	Estimated reach
Annual Field Day	Hayden, Anthony	Primary and Secondary	Presentation by Anthony Shepard covering project results and positives and negatives discovered to date	September 2019 September 2020 September 2021	350 Producers each year
Workshop	Hayden, Anthony	Primary	Project initiation meeting with core producers to discuss timeline and setup of project and collect initial survey data	3 February 2019	5 core producers
In Depth Article	Anthony	Primary and Secondary	4-page article covering key objectives and outcomes of the project published in FarmLink Annual Research Report	March 2020 March 2021 March 2022	800 Producers each year
Case Studies	Hayden	Primary and Secondary	1-page case study for each core producer covering details of the structure and location of their business and how they have benefited from using exclusion feeders	December 2021	800 Producers
Producer Guide	Hayden, Anthony	Primary and Secondary	A 2-page guide on how to set up and use exclusion feeding based on the results of the project including what input is required and what are the benefits	December 2021	800 Producers

3.4 Monitoring and evaluation

Table 2. Projects Monitoring and Evaluation plan

Evaluation Level	Generic Performance Measures	Project Performance Measures	Evaluation Methods
Inputs – What did we do?	• Number of core producers involved in demonstration sites • Number of producers observing demonstration sites • Number of head of livestock involved • Investment ($'s) from MLA and other parties • In Kind Contributions • What was purchased	• 5 core producers representing 11,000 head of sheep • 50 observers • Steering committee meetings • Investments - from MLA $74,730 - $3000 for 6000 eIDTags by Shearwell - $2500 for use of eID Reader by SheepMatters - $638 for 10 feed tests by Agrifood Technologies - Other in Kind: $110,880 • Purchased: - Project Facilitator Time $53550 - Travel $3960 - Professional Time $17,220	• Project plans and budgeting • Steering committee minutes • Initial core producer survey questions
Outputs – What did we do?	• Outputs from demonstration sites – live weight gain, ewe body condition score, feed test results,	• 3 initial and final weighing of lambs and scoring of ewes • 3 FarmLink open day events held	• Farm demonstration visits for data collection • Producer case studies written on core producers

	paddock conditions • Field days held, demographics collected, and M&E conducted • Promotion and communication activities	• Producer case studies written on core producers • Other communication products	
Changes in knowledge, attitudes and skills – How well did we do it?	• Change in knowledge/attitude of core and observer producers before and after project • Experience of producers involved in the PDS – extent to which they found the project useful or of value	• 80% of core producers have greater knowledge and value of exclusion feeders • 50% observer producers have increased knowledge and willingness to try exclusion feeding • Positive feedback from FarmLink Open Day	• Initial and post project surveys of core and observer producers • FarmLink Open Day attendance/evaluation surveys
Practice Changes – Has it changed what people do?	• Core and observer producer practice before and after the project • The extent of practice change adoption and where	• 80% of core producers using exclusion feeders post project results • 50% of observer producers interested in exclusion feeding	• Initial and post project surveys of core and observer producers • FarmLink Open Day attendance/evaluation surveys
Benefits – Is anyone better off?	• Benefits from outcomes ($ value of live weight gain) • Costs to achieve outcome and is it profitable • What are unintended benefits	• Heavier lambs in a shorter time period increasing profitability • Cost of production greater but more profitable • Improvement of pastures (groundcover) because less time grazing	• Data collection from demonstration sites • Cost benefit analysis • Post Project surveys • Producer case studies • Interviews with steering committee

General observations / Outcomes – Is the industry better off?	• Change in practices after the end of the project for whole target audience • Potential implications for producers outside target audience	• Core producers continue to use exclusion feeding • Observer producer begin to invest in exclusion feeding	• Surveys after project is completed • Feedback from FarmLink Open Day

4. Results

4.1Demonstration site results

4.1.1 2021 Results

In comparison to 2019 and 2020 (which where extreme years in available pasture) 2021 proved to be an even more challenging year with continual flooding at one site and with the other 2 sites with so much digestible FOO on offer the ewes and lambs did not consume any relevant grain from the creep feeders. All producers filled their feeders at the end of lambing with creep feed panels introduced post lamb marking. By weaning (average 102 days) the creep feeders on average had a reduction of 3% grain (both barley). It was observed by both growers that ewes and lambs were not going near the creep feeders throughout the trial in 2021, so no data was recorded.

In 2019 the average FOO across the 4 farms in the trial was 500 FOO (kg/DM/HA) with medium digestibility (7 MJ/Day)

In 2020 average estimate across the 3 farms of 1800 FOO with very high digestibility (29.6 MJ/Day)

In 2021 the average FOO across the 2 farms (flood effected farm not included) was 3650 FOO with a very high digestibility (38.9MJ/Day)

A lactating 60 kg ewe raring a single lamb needs 25.5 MJ/Day. So, this gives you an idea extreme range from 2019 to 2020 to 2021 in available digestible pasture.

Colin Geddes, Holbrook couldn't be in the trial for 2020 as he needed all the lambs boxed and ewes boxed in large mobs in paddocks to manage the abundant available pasture. He hoped to be involved in 2021, but didn't due to even more abundant available pasture.

Breed Type

Dart, Ariah Park – Dohne Dam x Poll Dorsett Sires

Kemp, Bimbi - Corriedale Dam x Corriedale Sires

Kitto, Beckom – Poll Merino Dam x Poll Merino Sires

4.1.2 3 Year Result Summary

For the 3 years of the trial, 2 years of data was recorded (2019 and 2020) with 2021 no data was recoded as noted previously in this report.

Over the 2 years on average there were 186 lambs in the control lamb groups and 198 in the trial lamb groups with the 3 active producers.

There was a total of 1314 lambs in the control mobs and 1413 in the trial mobs. A total of 2,727 lambs were measured.

All 3 producers saw a positive weight gain of the trial over the control lambs from lamb marking to weaning.

The average weight gain of the trial mob's vs control mobs for the 3 producers from lamb marking to weaning was 1.68kg (3 grams/day) over an average of 73 days

From weaning to post weaning (24 days) there was an average weight gain of 283 grams or .02 grams per day of the trial vs the control mobs of lambs.

Statistically there was no gain or loss of the trial mob over the control mob from weaning to post weaning.

The average overall weight gain of the trial mob's vs the control mobs from lamb marking to post weaning was 1.93 kg (2 grams/day) over an average of 97 days.

The summarised data from each of the trial is shown in Appendix 1. The headings in the data are abbreviated and are explained in the first table.

In summary that there was an initial weight gain of the trial lamb mobs of 1.68 kg over the first 73 days and then from weaning to post weaning, both trial mobs and control mobs having no advantage in weight gain. With the post weaning weight taken the was an overall average weight gain of the trial mobs of 1.93kg (2 grams/had/day) over the control mobs. This was on average over 97 days.

We are seeing a clear trend from the 2019 and 2020 data (average 1.68 kg over 73 days) that there is initial weight gain in the trial mobs over the control mobs of lambs (from lamb marking to weaning) Then from weaning to post weaning (16 to 18 weeks) they both put on the same weight gain. This leads to the trial mobs of weaners (on the exclusion feeders) still having that extra weight at post weaning weight.

4.2 Economic analysis

If you were to put an average monetary value to the weight gain of the trial mobs over the control mobs of 1.93kg x 53% yield = 1.02kg dressed. 1.02kg x $8.80 kg/ dressed (average value over 19/20) = $8.98 HD. Every 100 lambs = $898.00 gross

Over the 2 years of data recorded the average consumption of barley grain for the trail lambs over 3 farms were 280 grms/hd/day x 97 days = 27.2 kg. An average value of feed barley $245.00 tonne ($0.245 kg) over the 2 years. Total cost of grain per hd consumed = $6.66 hd

A net return of $2.32 per hd of the trail over the control lambs.

Due to that extra initial weight gain all 3 producers found that they had more trial lambs in the first draft of sale lambs, needing a minimum of 50kg live weight.

One producer(kemp) sold 76 lambs (25th February 2021, Cowra saleyards) with 49 (64.5%) trial lambs and 27 (35.5%) control lambs in the draft. They averaged $220.00 hd ($9.02 dressed at est 24.4kg dressed) Kemp saw this as an advantage with earlier cash flow, and those lambs gone earlier which meant for him less lambs to feed to get to the weight required for sale. This also meant there was a much higher percentage of control lambs still on the farm needing finishing.

Another grower, Dart, found an advantage for joining ewe lambs due to earlier weight gain. This was something he had not considered previously.

4.3Extension and communication

There were numerous extension activities undertaken throughout the project. This includes written material and field days/workshops.

Initial meeting – This was a workshop held with the core producers in 2019 before the project work began. There were 7 attendees including the group facilitator (Anthony Shepherd) who discussed how the project would work and what was the target. Initial surveys were conducted.

Magazine Article/Project Guide July 2019 – This article was published in FarmLink's quarterly magazine and introduced the project to FarmLink members. This magazine is distributed to about 300 people. https://indd.adobe.com/view/bbdbf4f4-c823-4608-81fb-0efe8233a056

Field Day September 2019 – An event was held as part of the FarmLink Annual Open Day where Anthony Shepherd gave a presentation about the project to about 25 people and discussed some preliminary results.

Annual Report – A full research report was written each year (published in 2020, 2021 and 2022) discussing all the results from each year of the trial and included in the FarmLink Annual Research Report. This is distributed to about 300 people. https://indd.adobe.com/view/3e6ee2f1-2ef8-4e9b-8c6a-bd9bbcaf4526

Case Studies – Articles about some of the core producers running exclusion feeding were published in the FarmLink quarterly magazine which discussed what they were doing and what advantages/disadvantages they had come across using the technique.
https://indd.adobe.com/view/0429b090-15f3-4407-ac49-737a83e5556c

Workshop March 2021 and 2022 – This was an event that replaced the Open Day due to COVID-19 where a presentation done to observer producers about the project and results to date. There were 20 growers in attendance in both years.

4.4Monitoring and evaluation

The survey results and all informal discussions with producers suggest that there was an increase in knowledge and skills resulting from the PDS project. Those that had a slightly negative attitude towards the idea at the beginning felt that using the technique during the project help them to see the benefits of using exclusion feeding. This means that all intend to implement exclusion feeding of lambs post project. However, the project has shown that it is not always a practical solution to use exclusion feeding and when there is a high pasture availability with good quality, there is no advantage to using the exclusion feeding because the stock as simply not needing to access the

feeders. This means that going forward producers have indicated that would only use exclusion feeding when supplementary feeding is necessary in drier seasonal conditions.
However, most project participants found there were secondary benefits to using exclusion feeding. One producer has started using the feeders in his breeding stock that lambs can reach a target weight earlier and be ready to be joined themselves. Another producers used eID tags for the first time during the PDS and as a result has implemented the technology into is farming business.
All participants have made a statement how further research into using exclusion feeding is needed to help improve the system and drive adoption amongst other producers. This was echoed by observer producers who would like to see more work before implementing themselves. This is mainly due to 2 out of the 3 seasons of the PDS were not drought conditions and using exclusion feeding may not be best practice.

5. Conclusion

5.1 Key Findings

- Using exclusion feeding can significantly improve lamb growth rates
- The use of exclusion feeding is more of a drought preparedness tool and may not always be necessary when pasture growth rates are high.
- Producers found that there could be added benefits from using exclusion feeding such as being able to join lambs earlier
- Producers that have been introduced to exclusion feeding will continue to use the technique
- All core producers agree that the method needs fine tuning and further research is necessary
- Many observer producers would like to see more positive results before fully implementing in their own business.

5.2 Benefits to industry

The project activities proved that exclusion feeding of lambs in drought is a very useful tool in drought to help improve productivity in what can be an unprofitable time for most red meat producers. The project was limited however, as not all years produced drought conditions which meant the true benefits of exclusion feeding could not be highlighted in these years. However, producers are discovering further benefits than just an increase in live weight gain which could lead to wider spread adoption of the technique if further work is conducted to quantify these benefits. These include being able to join maiden lambs earlier and increase the number of lambs produced because they are reaching target weights earlier. Overall, core producers intend to implement exclusion feeding into their business during the right conditions and this will lead to further adoption by other producers in the red meat industry.

6. References

Alcock, D., 2006. *Creep feeding lambs,* s.l.: NSW DPI.

White, A. & Hegarty, R., 2014. *nutritional management of lambs for finishing,* s.l.: University of New England.

7. Appendix

7.1Summary of Trial Results

The headings in the data are abbreviated and are explained below

HD = Number of lambs
Lamb BW = Lamb Body Weight
WW = Weaning Weight
WG = Weight Gain (from lamb marking to weaning)
DWG = Daily Weight Gain (from lamb marking to weaning)
DWG Index = Daily Weight Gain on Index (from lamb marking to weaning)
PWW = Post Weaning Weight
WG1 = Weight gain (from weaning to post weaning)
DWG1 = Daily weight gain (from weaning to post weaning)
DWG1 Index = Daily weight gain on Index (from weaning to post weaning)
OWG = Overall weight gain (lamb marking to post weaning)
ODWG = Overall daily weight gain (lamb marking to weaning)
ODWG Index = Overall daily weight gain on index (lamb marking to weaning)

Table 3. 2019 - Producers Combined Weight Gain Data

2019 - Producers Combined Weight Gain Data Summarised

	HD		WG1(kg)		DWG1 (grams/day)		WG2 (kg)		DWG2 (grams/day)		OWG (kg)		ODWG (grams / day)	
Growers	Control	Trial	Control	Trial	Control	Trial	Control	Trial	Control	Trial	Control	Trial	Control	Trial
Dart	207	219	13.3	15.8	0.209	0.247	11	10.8	0.323	0.316	24.3	26.6	0.248	0.271
Kemp	213	228	5.9	7.2	0.118	0.144	1.4	2.9	0.055	0.116	7.3	10.1	0.097	0.134
Kitto	192	186	13.3	14.4	0.188	0.202	6.5	6.8	0.176	0.183	19.9	21.2	0.184	0.196
Geddes	190	280	24.8	26.2	0.349	0.369								
Average	201	228	14.3	15.9	0.216	0.241	6.3	6.8	0.185	0.205	17.2	19.3	0.176	0.200
Total	802	913												
G Total	1715													
Difference			1.6		0.025		0.533		0.020		2.1		0.024	

Table 4. 2020 - Producers Combined Weight Gain Data

2020 - Producers Combined Weight Gain Data Summarised														
	HD		WG(kg)		DWG (grams/day)		WG1(kg)		DWG1 (grams/day)		OWG (kg)		ODWG (grams / day)	
Growers	Control	Trial	Control	Trial	Control	Trial	Control	Trial	Control	Trial	Control	Trial	Control	Trial
Dart	174	165	20.1	22.1	0.305	0.335	5.1	5	0.203	0.199	25.2	27.1	0.277	0.298
Kemp	152	143	10	11.6	0.136	0.157	8.1	8.6	0.106	0.113	17.9	20	0.119	0.132
Kitto	186	192	14.3	16	0.188	0.21	4.2	3.8	0.097	0.088	18.4	19.4	0.155	0.163
Average	171	167	14.80	16.57	0.210	0.234	5.80	5.80	0.135	0.133	20.50	22.17	0.184	0.198
Total	512	500												
G Total	1012													
Difference			1.77		0.024		0.000		-0.002		1.67		0.014	

Table 5. 2021 - Producers Combined Weight Gain Data

2021 - Producers Combined Weight Gain Data Summarised												
	HD		Lamb BW		DWG (grams/day)		WG1(kg)		DWG1 (grams/day)		OWG (kg)		ODWG (grams / day)	
Growers	Control	Trial	Control	Trial	Control	Trial	Control	Trial	Control	Trial	Control	Trial	Control	Trial
Dart	213	202	12.9	13.2										
Kitto	209	206	11.5	11.2										
Average	211	204	12.20	12.20										
Total	422	408												
G Total	830													
Difference			0.00		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!		#DIV/0!	