



# Final report

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## EPDS - To wean or not to wean

Project code: L.PDS.1803

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Date published: 21 October 2022

PUBLISHED BY  
Meat & Livestock Australia Limited  
PO Box 1961  
NORTH SYDNEY NSW 2059

Meat & Livestock Australia acknowledges the matching funds provided by the Australian Government to support the research and development detailed in this publication.

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## Abstract

The St Arnaud BestWool/BestLamb (BWBL) group investigated whether weaning their autumn drop prime lambs at 12 weeks of age would lead to production benefits or cause adverse effects to lamb weight gain. The demonstration compared weights of weaned and unweaned lambs across three farms in 2019 and 2020. At weaning, ewes and lambs were split into three mobs:

1. Weaned lambs
2. Unweaned ewes and lambs + weaned lambs
3. Unweaned ewes and lambs + weaned ewes

Lamb weights were measured at the time of weaning (12 weeks from start of lambing) and at sixteen weeks of age. Measurements were also taken at 22 weeks of age in Year 1 and 21 weeks in Year 2. The demonstration found little or no significant differences in the average weights of weaned and unweaned lambs by the time they were sold at 22 weeks of age. Additionally, abattoir data from one property showed no significant difference in hot carcass weights and lean meat yield between weaned and unweaned lambs. Participants found there were additional benefits to weaning lambs rather than leaving them on their mothers such as managing spring pastures effectively, allowing ewes to regain condition before summer and greater flexibility in their lamb marketing strategy. The information obtained from this study can be used to inform other producers across the region (and potentially other regions) that there are no penalties to weaning lambs.

## Executive summary

### Background

The St Arnaud BestWool/BestLamb (BWBL) group were interested to investigate whether weaning their autumn drop prime lambs at 12 weeks of age would lead to production benefits or cause any adverse effects to lamb weight gain. In 2019, the group embarked on a two-year farm demonstration co-funded by Agriculture Victoria and Meat & Livestock Australia (MLA) to weigh up the benefits of weaning.

Many producers in the Wimmera region sell terminal lambs directly from the ewe, however weaning is a common practice for replacement (maternal) ewe lambs. Some of the group members were concerned that with increasing climate variability, unreliable water availability and high fodder costs (culminating in variable rainfall and annual pasture production), lamb growth rates could be compromised through the weaning process. Although producers have been sceptical about weaning terminal lambs, all have looked at or considered alternative systems and/or more efficient finishing systems.

### Objectives

The aim of this demonstration was to evaluate if there are production benefits for both ewes and lambs by weaning them at 12-14 weeks from the start of lambing as opposed to not weaning the lambs and leaving them on the ewes until they are at a marketable kill weight. The specific objectives were to:

**1. Demonstrate the impact of weaning lambs on lamb growth rate**

(Hypothesis: 10% increase in growth rate of weaned versus un-weaned lambs)

This was not fully achieved. On some farms and across years weaned lamb growth rate outperformed the unweaned lambs; however, this growth rate was not statistically significant. The results of the trial did, however, demonstrate that there was no adverse outcome in growth rates of weaned lambs compared to unweaned lambs.

**2. Demonstrate the impact on carcass weight at sale date of weaned and unweaned lambs**

(Hypothesis: Higher carcass weight in weaned Vs un-weaned lambs at sale date)

This was not achieved. There was no significant difference in the carcass weight of weaned lambs compare to un-weaned lambs. The data set was small and only contained lambs from one property and one year. Further investigation into carcass traits between weaned and unweaned lambs that incorporates a larger sample size across multiple genetic lines and seasons is warranted.

**3. Demonstrate the impact on dressing % of weaned and un-weaned lamb carcasses**

(Hypothesis: No difference in the dressing % of weaned or un-weaned carcasses)

This was achieved. There was no significant difference in the lean meat yield between weaned and unweaned lambs, although the sample size was small and data was only obtained for one property in one year.

**4. Demonstrate the impact on ewe reproductive rate of weaning compared to not weaning**

(Hypothesis: 5% improvement in reproductive rate of ewes that had lambs weaned vs ewes that did not have lambs weaned at their subsequent mating)

This was not achieved. On-farm management practices of the participants meant that ewes that had lambs weaned versus ewes that carried lambs at foot further through the investigation had to be co-mingled over the summer period and these ewes were not adequately identified. As a result, at scanning, ewes that were enrolled in the trial could not be easily identified.

**5. To increase skills in condition scoring ewes, lamb management and FOO estimation**

This was achieved as evidenced by pre and post surveys suggesting an increase in skills from 4/10 to 7.3/10. However COVID-19 prevented 3 planned producer meetings, so less time was spent on these activities than was hoped.

**6. To increase awareness and adoption of weaning practices for the benefits of lamb production and ewe management.**

This was achieved through 3 group meetings, 1 webinar, 1 radio article, 2 online presentations and 1 media article. All producer hosts have adopted weaning and their knowledge of weaning practices had increased from 3.9/10 to 8.1/10.

## Methodology

The demonstration compared weights of weaned and unweaned lambs across three farms in 2019 and 2020.

At weaning, ewes and lambs were split into three mobs including:

- Weaned lambs
- Unweaned ewes and lambs + weaned lambs
- Unweaned ewes and lambs + weaned ewes

Ewe condition and lamb weights were measured at the time of weaning and at sixteen weeks of age. Measurements were also taken at 22 weeks of age in Year 1 and 21 weeks in Year 2.

## Results/key findings

The project demonstrated that there were no adverse outcomes from weaning lambs and highlighted that the perceived disadvantages of weaning lambs are unfounded. The results showed that growth, weight, dressing percentage and lean meat yield of weaned lambs were not negatively affected by weaning compared to unweaned lambs. Anecdotally, producers found weaning led to better, simpler management of ewes and lambs and all producers involved in the demonstration had adopted weaning practices or intended to after the second year of the project.

## Benefits to industry

The information obtained from this demonstration can be used to inform other producers across the region that there are no penalties for weaning lambs. In fact, participants of this study found there were additional benefits to weaning lambs such as managing spring pastures effectively, allowing ewes to regain condition before summer and having flexibility in their lamb marketing strategy. The results provide grounds for adoption of weaning, leading to improved ewe and lamb management.

## Future research and recommendations

The protocols and benefits of weaning lambs have been well established in the published literature. In terms of future research specifically related to this project, identifying differences from sire effects and time of birth and their impact on growth rates to weaning would enhance the accuracy of the data collected. For example, some lambs could have been born to higher growth rate sires or born in the first few days of lambing and this could have an effect on growth to weaning. Furthermore, assessing the condition score of ewes at various time points post weaning to pre-joining could show differences in conception rate between ewes that have had lambs weaned versus ewes that have had lambs unweaned. Additionally, recording when ewes lamb throughout the lambing process (eg early (first two weeks of lambing) versus late (last three weeks of lambing))

might allow identification of which lambs to wean first to optimise greater weaner survival outcomes or to target specific meat or re-stocker markets.

Further results extension and communication work with livestock agents would have been advantageous not only in the St Arnaud district but also further afield. Additionally, abattoir tours for group members and those outside the group to visualise the difference between weaned and unweaned lambs would have been well received.

## PDS key data summary table

<b>Project Aim:</b>			
<i>The aim of this work is to evaluate if there are production benefits for both ewes and lambs by weaning them at 12-14 weeks from the start of lambing as opposed to not weaning the lambs and leaving them on the ewes until they are at a marketable kill weight.</i>			
	<b>Comments</b>		<b>Unit</b>
<b>Number of core participants engaged in project</b>		4	
<b>Number of observer participants engaged in project</b>	Observer producer numbers at the start of project. Numbers reduced throughout the project due to COVID-19 interruptions and other contributing factors.	19	
<b>Core group no. ha</b>		3700	
<b>Observer group no. ha</b>		40000	
<b>Core group no. sheep</b>		6700	hd sheep
<b>Observer group no. sheep</b>		50000	hd sheep
<b>Core group no. cattle</b>		0	hd cattle
<b>Observer group no. cattle</b>		50	hd cattle
<b>% change in core &amp; observer</b>	<b>knowledge</b> <b>skill</b> <b>motivation to change</b>	<i>Average across objectives</i>	K 117% S 83% M 79%
<b>% practice change adoption – core &amp; observers</b>	<i>All were weaning or intended to at the end of the demonstration</i>	100%	3.9/10 to 8.1/10 4/10 to 7.3/10 4.8/10 to 8.6/10
<b>Key impact data</b>			
Benefit cost could be undertaken because lamb weight differences between weaned and unweaned were not consistent across sites. Producers indicated that there was a considerable value in weaning lambs but that the greatest benefit was from ease of management and improved feed allocation. The value of these benefits could not be quantified.			

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## 1. Background

In the Wimmera region of Victoria, lambs are commonly marketed as “sucker” lambs – sold directly from the ewe. In doing so, producers are compromising the ability of the ewe to re-gain condition prior to her next mating and the most efficient use of both pasture and supplementary feed is un-realised. Anecdotally, producers are mis-informed that the major benefits of not weaning lambs is that the dressing percentage of the carcass will be greater compared to weaned lambs and that they can take advantage of higher prices per head, given most producers in the area lamb between April and June. To add complexity to the management of lambs, producers have been reluctant to wean and keep lambs on longer because the timing coincides with cropping activities and makes the management of lambs difficult, particularly with variable seasons and an unreliable water supply.

At the farm gate level, producers never realise the potential value of weaning as a key practice in their management and as such compromise subsequent reproductive rate in their ewes the following year. Additionally, producers in the area are also limited by growing season, meaning that in the majority of years, lambs are sold at store value (eg 18-20kg carcass weight) before pasture senescence and grass seed issues and rarely finished to carcass weights above 24kg dressed. As a result of these combined factors, maximising the kilograms of carcass weight produced per hectare go unrealised and benchmarking the kilograms of lamb produced for future improvement is seldom calculated.

Mixed livestock enterprises are widespread throughout the Wimmera/Mallee region of Victoria. There is interest amongst producers to increase farm efficiency, by increasing lamb turn-off weights, and conserving fodder reserves and stubbles for mature age ewes over the summer period.

The aim of this project was to demonstrate to both host and observer producers that there are no adverse outcomes to weaning lambs. The participants of this trial and the observer producers in the area readily wean their Merino lambs but there is a perception that weaned terminal lamb growth rates and carcass attributes will be affected by weaning. Much of this mis-information is based on anecdotal experiences by producers that have weaned and had a poor result which has been attributed to the weaning process. In some instances, weaning may have coincided with an adverse event (e.g. weaning lambs onto low quality pastures or sub-clinical health issues leading to higher mortality) but the lack of quantitative data and investigation into the actual cause limits meaningful conclusions and the process of weaning is often blamed. Furthermore, livestock selling agents have varying preferences for the livestock they sell or the livestock they believe the processors value highly. As livestock agents are trusted members of the farm business, their beliefs or opinions are usually highly regarded by the producer and are therefore carefully considered at the farm level. Therefore, the agent’s opinion or belief carries significant weight and can influence the management decision of the producer.

The information obtained from this study can be used to inform other producers across the region that there are no penalties for weaning lambs. In fact, participants of this study found there were additional benefits to weaning lambs such as managing spring pastures effectively, allowing ewes to regain condition before summer and having flexibility in their lamb marketing strategy.

While this project did not specifically investigate the psychology of the lamb marketing process and the influence of anecdotal information on the decision-making process, it became increasingly obvious that this could be having a major impact on whether or not farmers wean their lambs. Further investigation into the adoption of weaning on a broader scale seems warranted.



## 2. Objectives

The aim of this work was to evaluate if there are production benefits for both ewes and lambs by weaning at 12-14 weeks from the start of lambing as opposed to not weaning the lambs and leaving them on the ewes until they are at a marketable kill weight.

The specific objectives are to:

1. **Demonstrate on four host sites the impact of weaning lambs on lamb growth rate**  
*(Hypothesis: 10% increase in growth rate of weaned versus un-weaned lambs)*
2. **Demonstrate the impact on carcass weight at sale date of weaned and unweaned lambs**  
*(Hypothesis: Higher carcass weight in weaned Vs un-weaned lambs at sale date)*
3. **Demonstrate the impact on dressing % of weaned and un-weaned lamb carcasses**  
*(Hypothesis: No difference in the dressing % of weaned or un-weaned carcasses)*
4. **Demonstrate the impact on ewe reproductive rate of weaning compared to not weaning**  
*(Hypothesis: 5% improvement in reproductive rate of ewes that had lambs weaned vs ewes that did not have lambs weaned at their subsequent mating)*
5. **To increase skills in condition scoring ewes, lamb management and FOO estimation**
6. **To increase awareness and adoption of weaning practices for the benefits of lamb production and ewe management.**

In the broader sense, the demonstration was successful in that 100% of the participants saw the value of weaning their prime lambs and adopted this management practice. Producers had already adopted weaning practices after the second year of the demonstration and felt that running the trial for a third year would not offer any additional benefit.

Despite this, not all objectives were achieved. The demonstration required significant input from host producers to manage multiple mobs of sheep, with regular monitoring of feed and lamb weights. COVID-19 interruptions prevented the coordinators from travelling and being on farm to guide participants with the methodology and support data collection for analysis. Furthermore, meetings could not be held for a large period during the project, which caused a decline in group participation, particularly the observer producers

Objective 1 –not fully achieved. On some farms and across years weaned lamb growth rate outperformed the unweaned lambs; however, this growth rate was not statistically significant. The results of the trial did, however, demonstrate that there was no adverse outcome for growth rates of weaned lambs compared to unweaned lambs.

Objective 2 –not achieved. There was no significant difference in the carcass weight of weaned lambs compare to un-weaned lambs. The data set was small and only contained lambs from one property and for one year. Further investigation into carcass traits between weaned and unweaned lambs that incorporates a larger sample size across multiple genetic lines and seasons is warranted.

Objective 3 –achieved. There was no significant difference in the lean meat yield between weaned and unweaned lambs, although the sample size was small, and data was only obtained for one property in one year.

Objective 4 –not achieved. On-farm management practices of the participants meant that ewes that had lambs weaned versus ewes that carried lambs at foot further through the investigation had to

be co-mingled over the summer period and these ewes were not adequately identified. As a result, at scanning, ewes that were enrolled in the trial could not be easily identified.

Objective 5 –partially achieved. Both participant and observer producers engaged in on-farm training around condition scoring and pasture assessment. Skill levels were increased while increasing knowledge around the impact of ewe management before and after weaning. The group also attended two workshops with presentations around best weaning practice and the management of weaners post weaning. Additional training sessions were planned but could not go ahead due to COVID-19 restrictions.

Objective 6 – mostly achieved. Adoption of weaning was achieved by 100% of the core producers. The project increased awareness of weaning practices through webinars and group meetings with 119 attendances as well as media and social media. Ewe management was investigated at due to constraints with on-farm management practices.

### **3. Demonstration Site Design**

#### **3.1 Methodology**

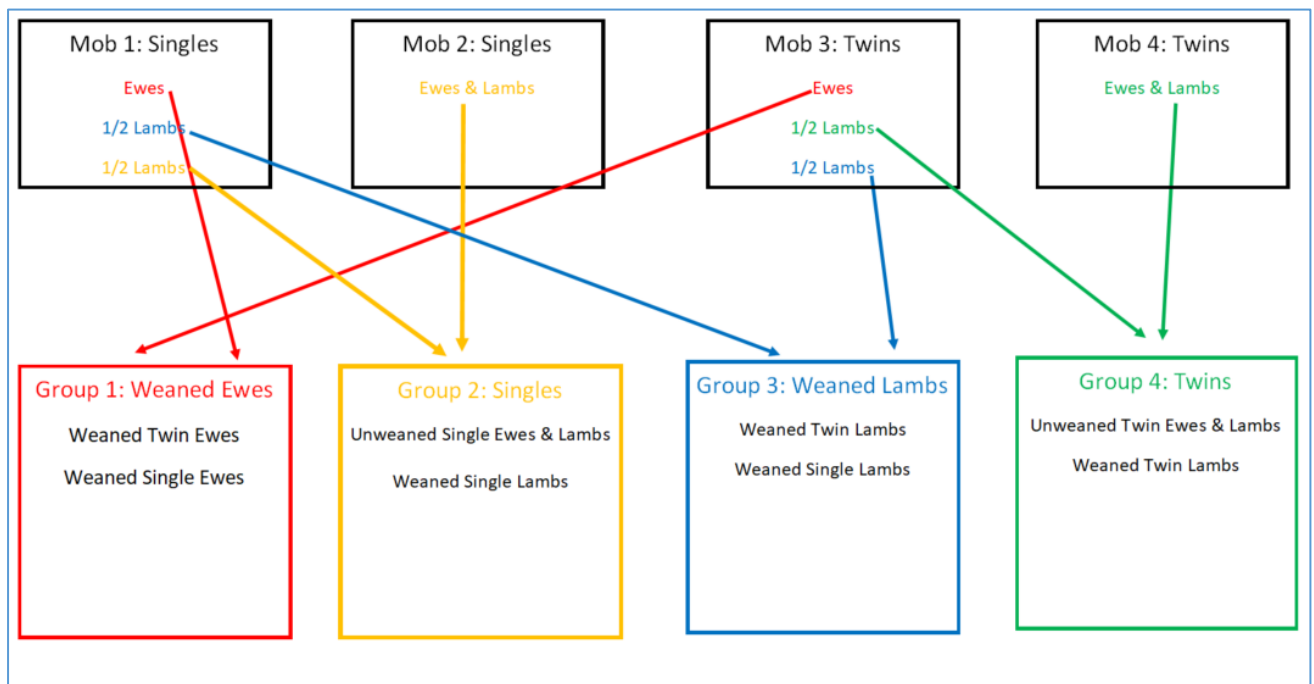
The demonstration was undertaken on four mixed sheep/cropping properties in the St Arnaud district of Victoria in 2019 and three in 2020 (totalling four different hosts).

The number of ewes and lambs in each treatment/paddock varied between sites due to paddock and water availability and overall sheep numbers. Participants involved in the trial lambed at different times. To minimise the variation, all lambs were weaned at approximately 12 weeks from the start of lambing. The participants felt it was important not to intervene on or impose differential management of sucker lambs outside their normal management practices. At weaning, lambs and ewes were randomly allocated to the four treatments shown in Fig 1.

The design (Fig. 1) accounted for twin and single lambs. Groups 2 and 4 had weaned lambs in addition to unweaned ewes and lambs to help account for paddock variation between the groups.

The following steps were taken at each site:

- In the weaned mobs, lambs were weaned at 12 weeks from the start of lambing,
- Ewes were condition scored and identified for their groups
- Lambs were weighed and recorded
- Ewes and lambs were split into four mobs including;
  - Weaned twin ewes, weaned single ewes
  - Unweaned single ewes & lambs, weaned single lambs
  - Weaned twin lambs, weaned single lambs
  - Unweaned twin ewes & lambs, weaned twin lambs
- Feed On Offer (FOO) measured for weaning paddocks
- Feed testing of weaning paddocks for quality
- Photo taken of each paddocks feed and each mob

**Figure 1: General/planned trial set up**

At four weeks post weaning, participants had the option to sell their sucker lambs or keep sucker lambs on ewes until such time as they wish to sell those lambs.

It was planned that at each for the following time periods the following would be taken. In some cases these dates were changed due to weather, personal circumstances or that fact that all lambs had been sold.

16 Weeks, 20 Weeks, 24 Weeks, 28 Weeks, 32 Weeks:

- Weights of all trial lambs
- Number of wet ewes and the number of ewes dry
  - FOO estimate and feed test for quality
- Photo of each paddocks feed and each mob
- Abattoir kill sheets collected where possible
- Ewes condition scored

At the point of sale, lambs were weighed to ascertain daily growth rates. Where possible, abattoir kill sheets were analysed for yield. In addition, ewe condition scores were measured. At the same time the sucker lambs were sold, weaned lambs were weighed so that an equivalent growth rate could be calculated at the same time. When each participant decided to sell weaned lambs, weights and abattoir data were collected where possible and analysed. Wherever ewes and lambs were separated, pasture FOO and quality was measured.

### 3.1.1 2019

The trial started in April 2019, by which time most farms had already allocated their lambing paddocks. This meant that hosts were constrained by the number of mobs they could run. As a result, the producers each varied the methodology design slightly, to accommodate their situation within the demonstration. A total of four sites completed the demonstration but an issue with data collection on one site prevented analysis of data. Methodologies for the successful sites can be seen in Figures 2-4.

Of the variations to designed methodology in 2019, Site 2 (Fig. 3) provided the best ability to analyse paddock variation.

Figure 2: Demonstration site 1

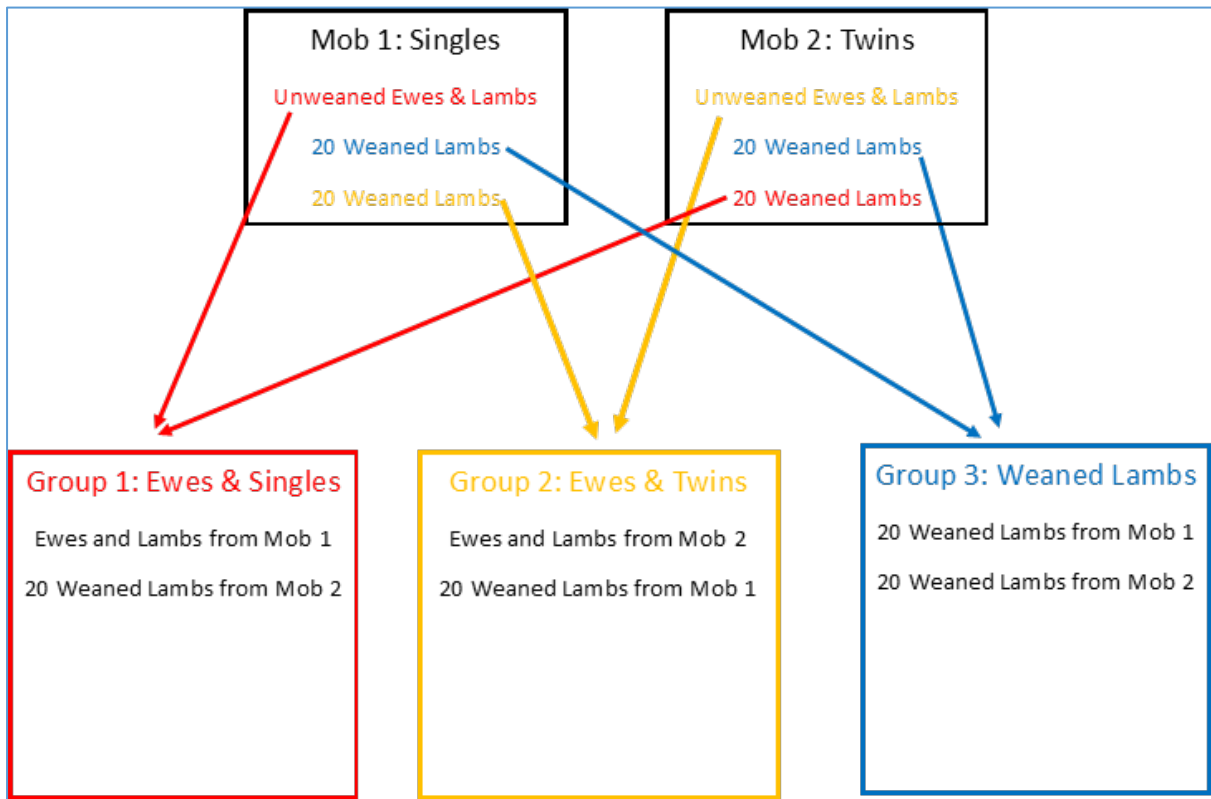
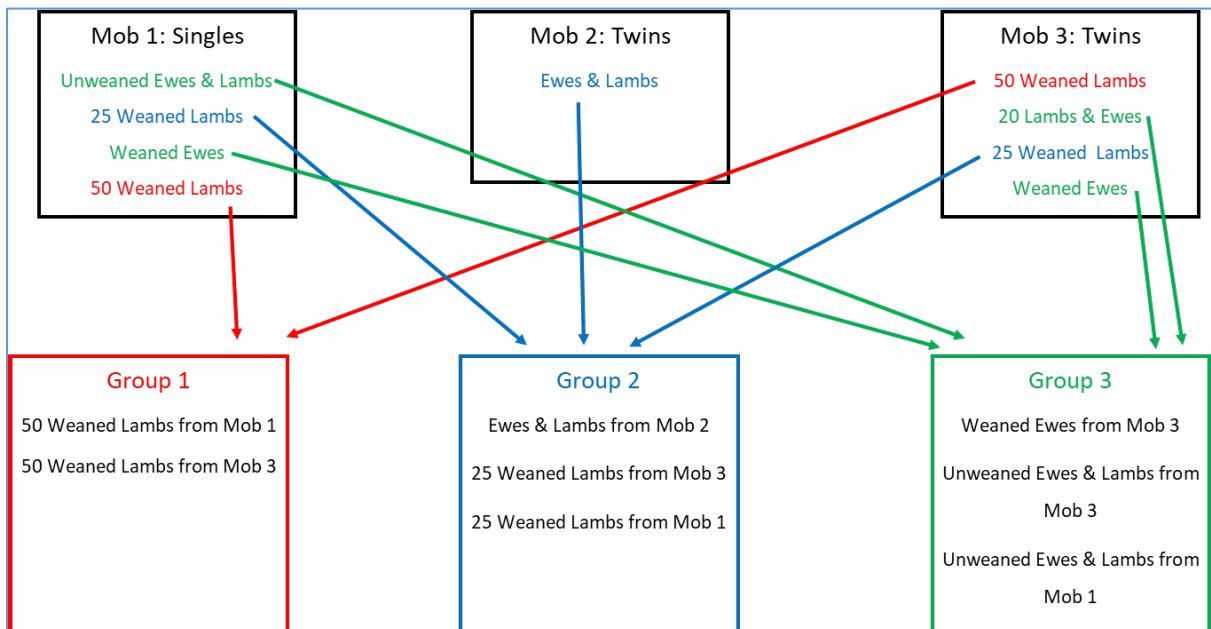
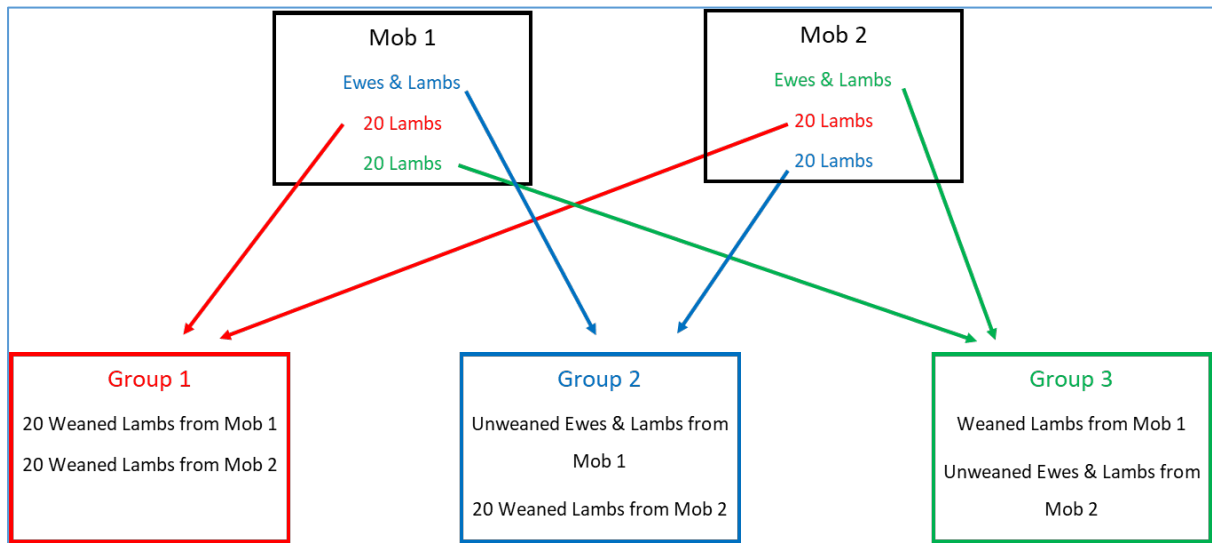


Figure 3: Demonstration site 2



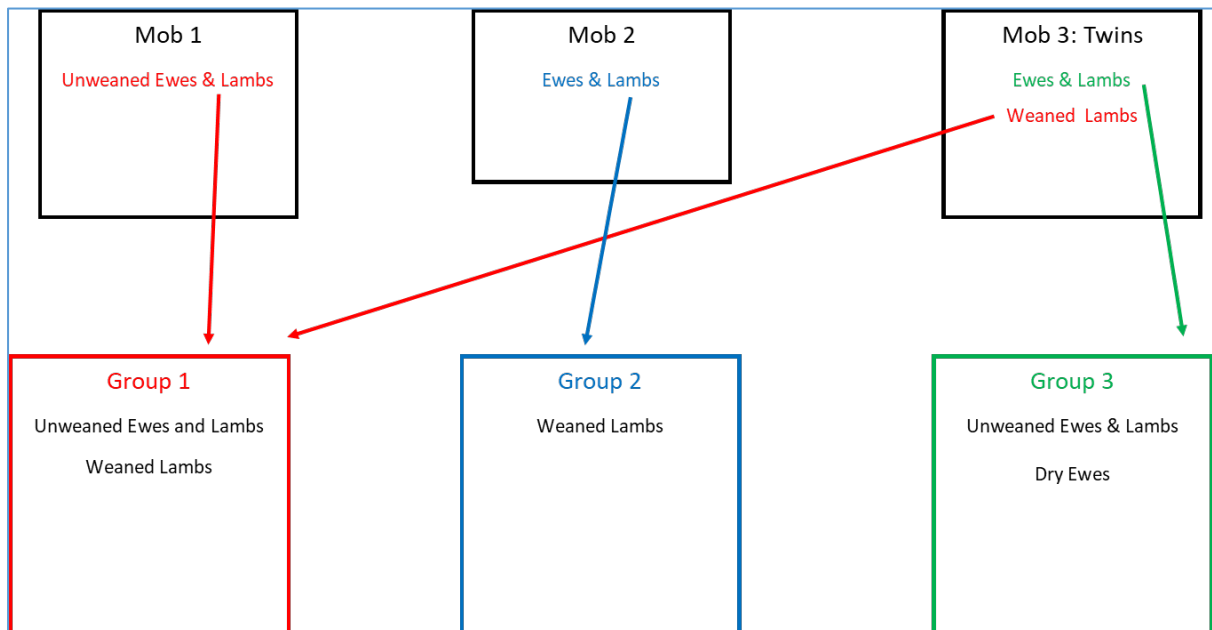
**Figure 4: Demonstration site 3**



**3.1.2 2020**

A total of three sites undertook the demonstration in 2020. Due to COVID-19 impacting data collection only one site produced results that could be used. The methodology for the site that provided results can be seen in Figure 5. Ewes from Mob 2 were removed from the trial.

**Figure 5: Demonstration site 4**



**3.2 Economic analysis**

Planned economic analysis involved estimating the value of the difference in weights between weaned and unweaned lambs and the value of in difference in ewe condition between ewes with weaned and unweaned lambs. However, this could not be achieved because there was either no difference in weights or the difference was not consistent across the treatments or sites.

Furthermore, producers were unable to follow ewe condition scores without the assistance of the project team under COVID-19 restrictions.

### 3.3 Extension and communication

Planned communication and extension activities included the following:

- 2 social media posts/ year (on AgVic Facebook and/or Twitter)
- 1 media article based on annual outcomes / year
- 1 group field day or major engagement event including skill development sessions (FOO and/or CS assessment or lamb autopsy workshop)/ year
- Meeting to review the demonstration and discuss how the project is performing and any modifications for next year's methodology/ year
- 1 case studies or fact sheet the extension and communication activities identified in the project's communications plan
- Annual hands-on adoption activities such as condition scoring and pasture assessment

### 3.4 Monitoring and evaluation

Monitoring and evaluation included:

- Surveys to benchmark KASA (knowledge, attitude, skills and aspirations) undertaken by the group prior to commencing the demonstration and at its completion.
- Evaluation of group activities using a typical feedback form.
- Annual group review of the demonstration to discuss how the project is performing, results and levels of adoption by the group and required changes to implement improved lamb survival rates.
- Estimates of costs and benefits of the practice demonstrated.

## 4 Results

### 4.1 Demonstration site results

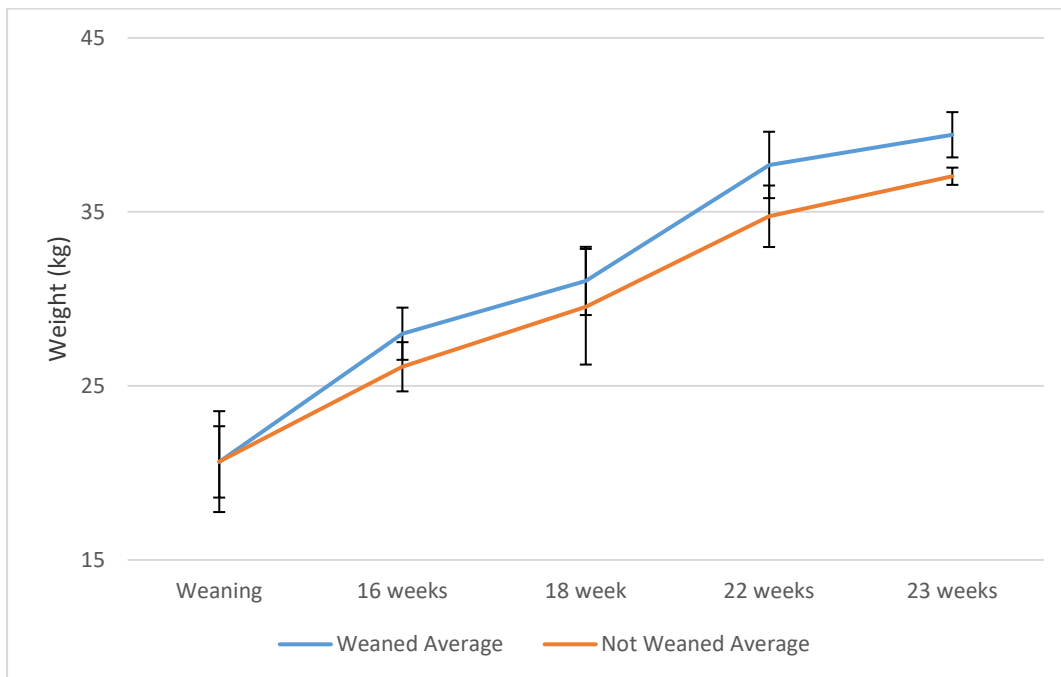
#### 4.1.1 Year 1-2019

##### **Demonstration site 1-2019**

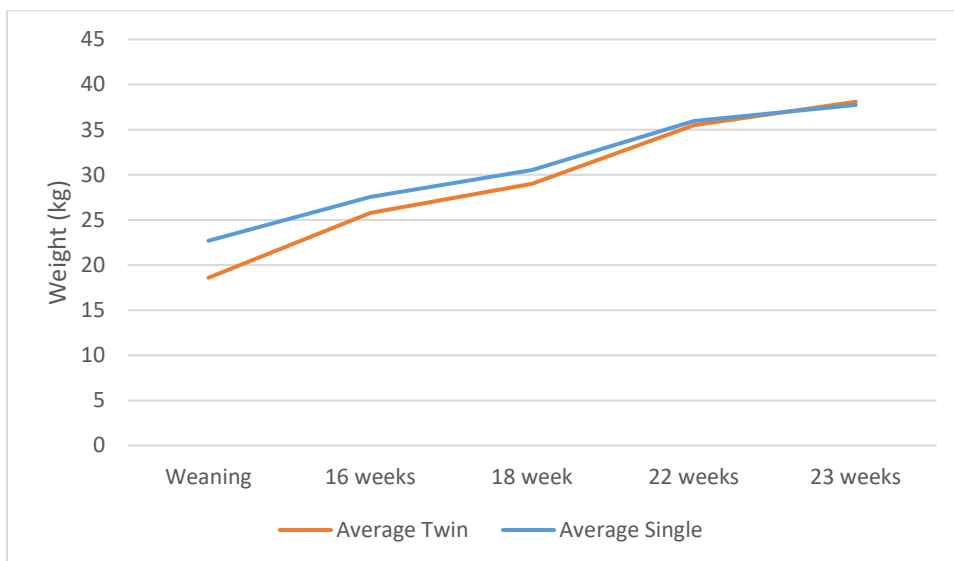
Demonstration Site 1 used the method shown in Figure 2. However, an error occurred in setting up data to be electronically collected from Group 3 (weaned single lambs and weaned twin lambs) which meant data from the weaned single lambs and twin lambs could not be separated.

**Feed On Offer measured 3000kg Dry Matter (DM)/ha in each Site 1 paddock at weaning. Feed On Offer remained consistent across all paddocks dropping to about 2000kg DM/ha in each paddock by the 25 weeks of age mark.**

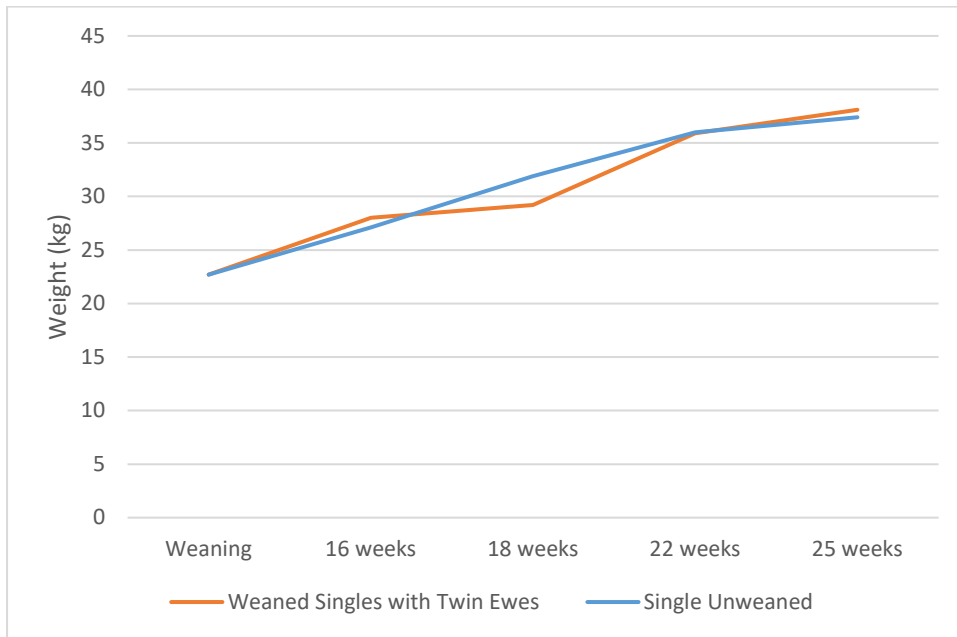
The average weight of all weaned lambs at Site 1 was 2kg heavier than the average weight of all unweaned lambs at 16 weeks. By 23 weeks, weaned lambs were still 2kg heavier than unweaned lambs, which at this age was a significant difference (Fig. 6).

**Figure 6: Site 1 average weight of weaned vs unweaned lambs**

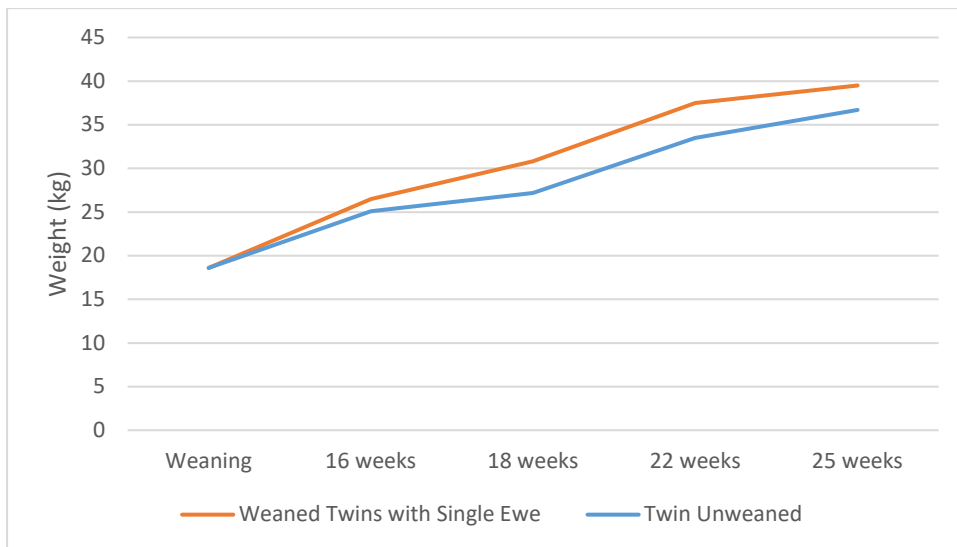
On site 1 at the time of weaning, single lambs outweighed the twin lambs. This gap slowly closed over time until 23 weeks of age when the twins caught up (Fig. 7).

**Figure 7: Site 1 average weight of all (weaned and unweaned) single vs twin lambs**

The weaned single lambs in with the twin-bearing ewes and lambs grew slower between weaning and 18 weeks of age than the unweaned single lambs. However by 22 weeks of age they had caught up and continued to grow at a faster rate (Fig. 8).

**Figure 8: Site 1 weight of weaned vs un-weaned singles**

The weaned twin lambs with single ewes and lambs were heavier than the unweaned twins at each weighing from 16 weeks of age (Fig. 9).

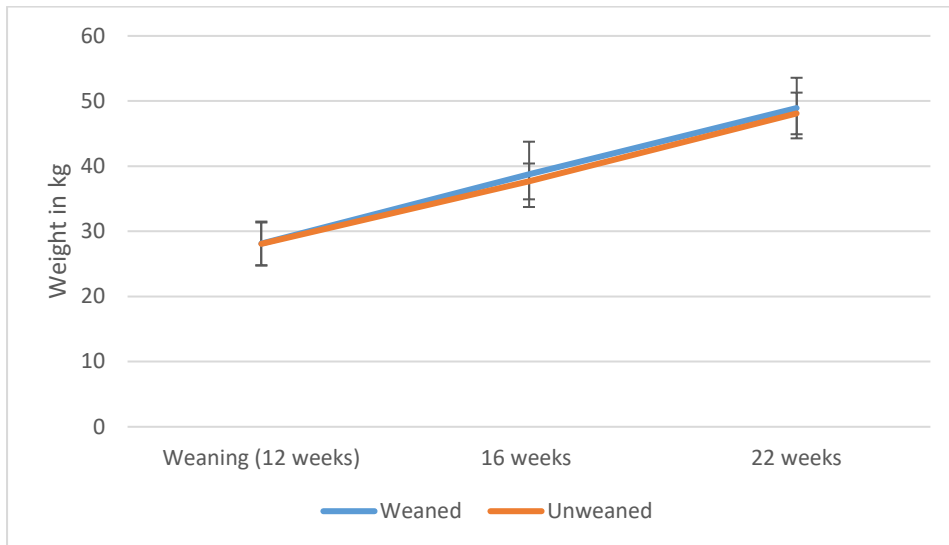
**Figure 9: Site 1 weight of weaned vs un-weaned twins**

### Demonstration Site 2-2019

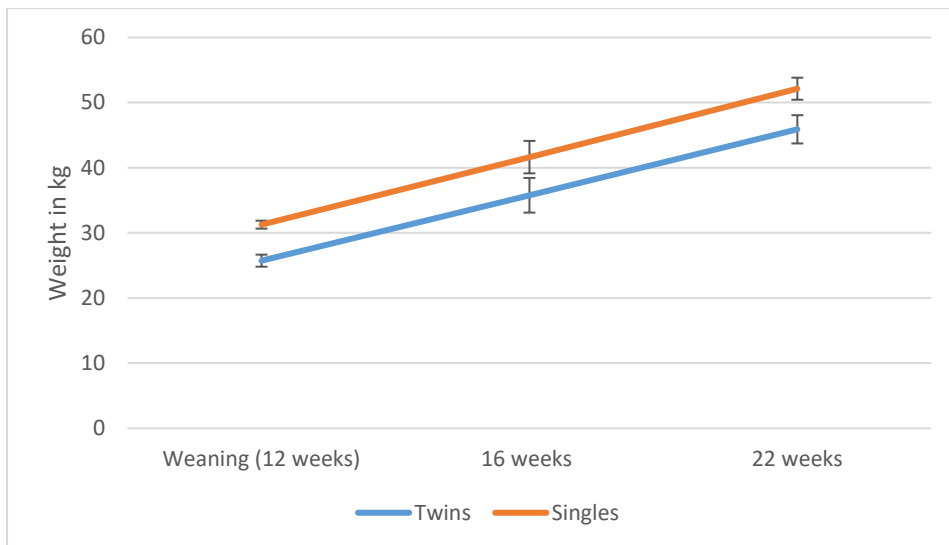
FOO for each group varied at demonstration site 2. Group 1's paddock had 1200kg DM/ha, made up of a clover, ryegrass mix whilst group 2 and group 3's paddocks had 2500 kg DM/ha made up of a clover, ryegrass, grazing barley mix (Fig. 3). All lambs had full access to self-feeders with a mix of 80% oats and 20% lentils to supplement pasture.

Site 2 found no significant differences between the weights of weaned and unweaned lambs (single and twins combined) at 16 weeks and 22 weeks of age (Fig. 10).

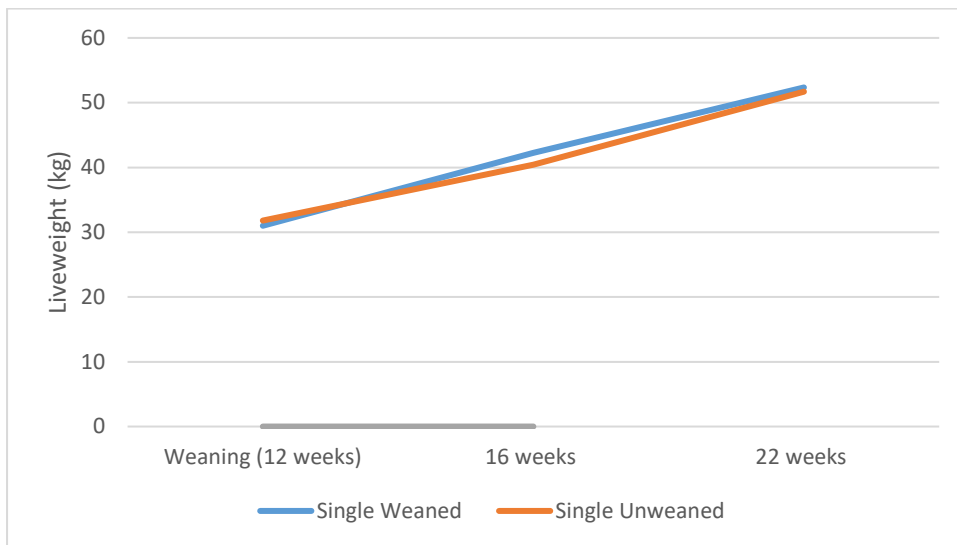


**Figure 10: Site 2 average weight of weaned vs unweaned lambs**

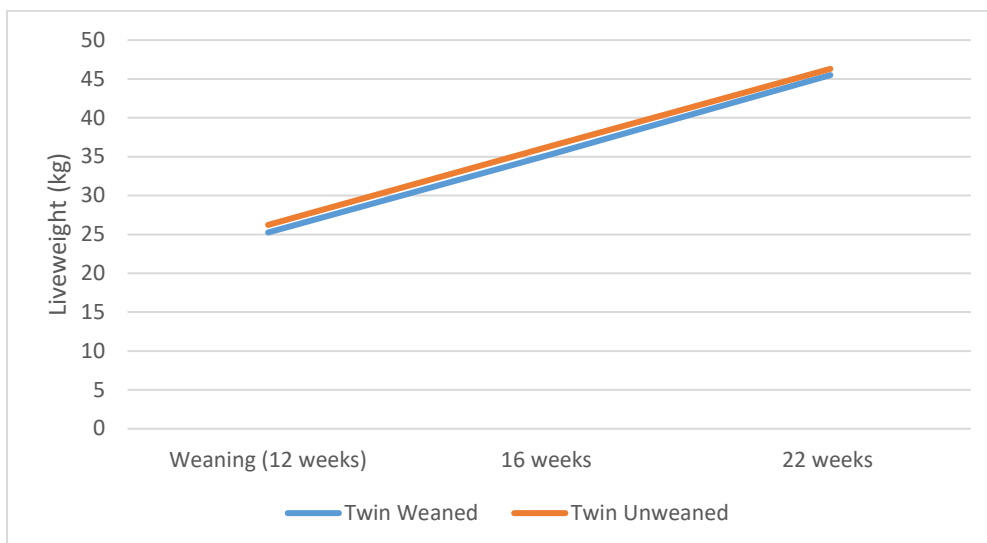
At weaning, the single (weaned and unweaned) lambs were approximately 5kg heavier than the twin (weaned and unweaned) lambs, and this continued until they were sold (Fig. 11).

**Figure 11: Site 2 average weight of singles vs twins**

Single weaned and unweaned lambs were similar weights from 12 weeks through until 22 weeks of age (Fig. 12).

**Figure 12: Site 2 average weight of weaned and unweaned single lambs**

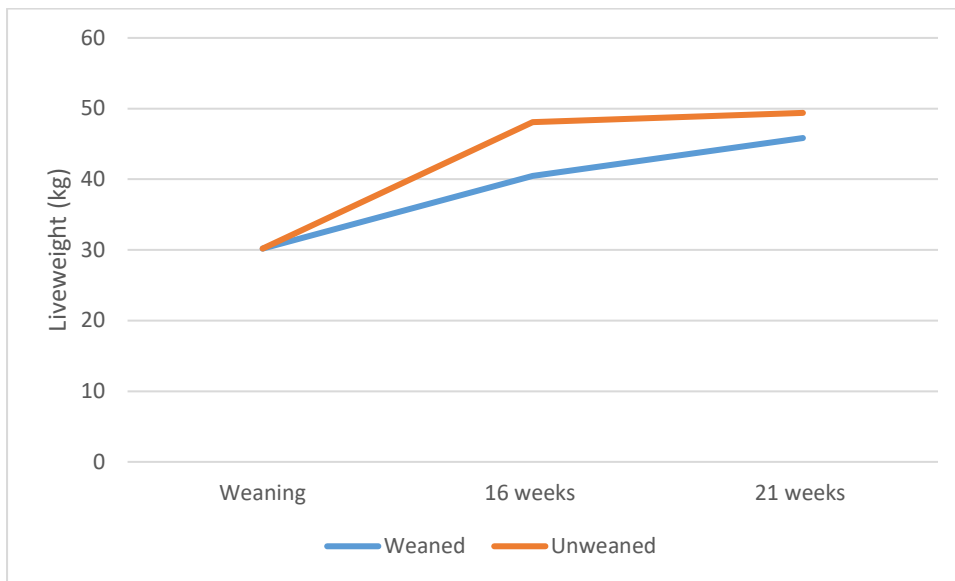
Twin lambs that were put into the weaned group were slightly lighter than the unweaned group at 12 weeks and this difference remained through to 22 weeks of age, indicating that difference was not a result of weaning (Fig. 13).

**Figure 13: Site 2 average weight of weaned and unweaned twin lambs**

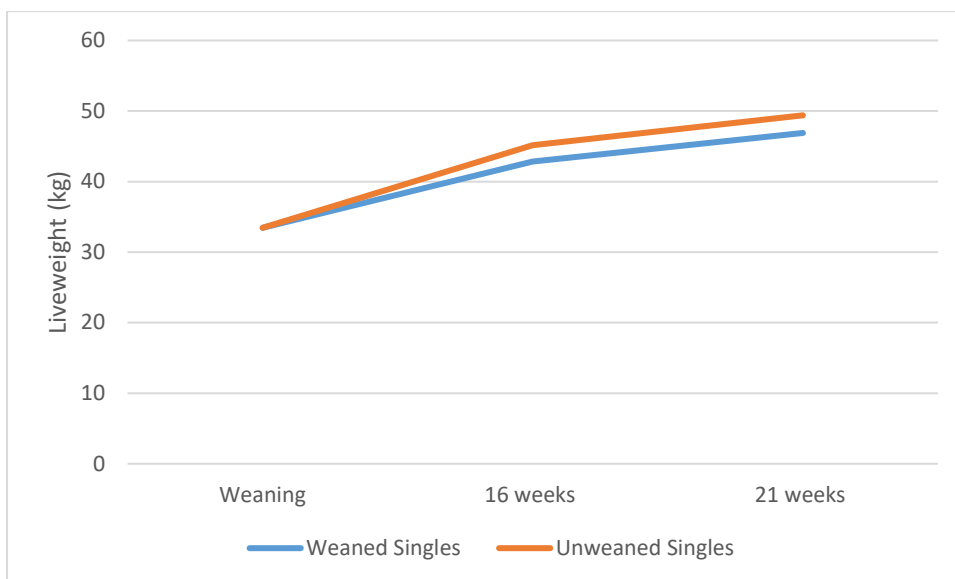
### Demonstration site 3-2019

Feed On Offer data from this site was not collected, however all groups went onto grazing barley crops from 12 weeks of age.

On demonstration site 3, single and twin unweaned lambs finished heavier than the single and twin weaned lambs (Fig. 14). At 16 weeks of age the unweaned lambs were about 8kg heavier than the weaned lambs, however by 21 weeks of age this gap had closed to a difference of 3.5kg.

**Figure 14: Site 3 average weight of weaned and unweaned single and twin lambs**

The weaned single lambs were lighter than the unweaned single lambs at both 16 and 21 weeks of age by approximately 2kg (Fig. 15).

**Figure 15: Site 3 average weight of weaned and unweaned single lambs**

There was a large difference in the weight of weaned and unweaned twin lambs at 16 weeks of age with unweaned lambs averaging 12kg heavier than weaned lambs. A missing dataset meant there was no average weight of the unweaned twin lambs at 21 weeks of age. Despite this, it can be assumed that the weaned twins were lighter than the unweaned twins based on the fact that they are lighter than the weaned twins were at 16 weeks of age (Fig. 16).

**Figure 16: Site 3 average weight of weaned and unweaned twin lambs**

#### 4.1.2 Year 2- 2020

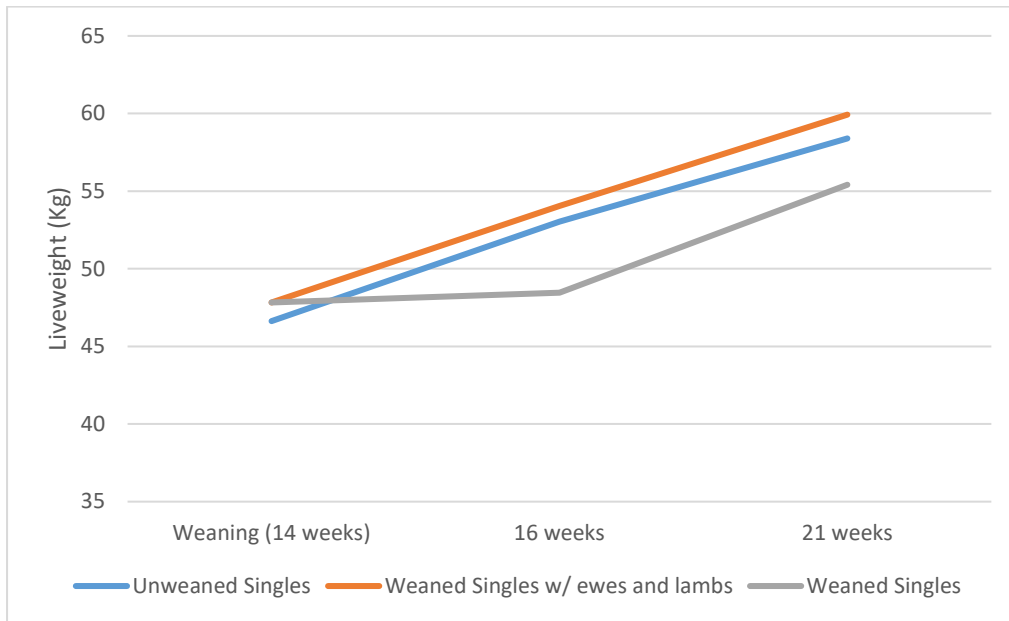
Three farms undertook measurements in 2020 after one host farm pulled out due to COVID-19 restrictions. COVID-19 also removed the option for the project team to help with the data collection meaning that elements were missing, particularly the FOO assessments and ewe condition scores. Data from one farm was insufficient to allow full analysis, which was explained by home-schooling through the busy data collection period. Data from a further farm was unusable due to an issue with electric weighing that was only recognised at the data analysis stage.

#### Demonstration site 4-2020

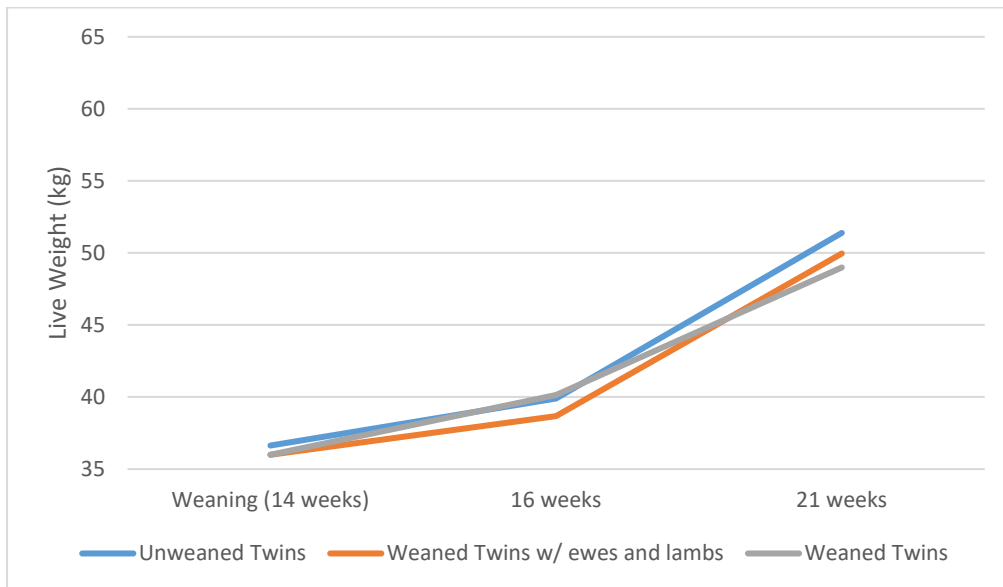
Lambs at this farm were weaned at 14 weeks of age instead of 12 weeks due to unforeseen personal circumstances for the host. The single lambs were approximately 10kg heavier than the twins at each weighing (Fig. 17). The weaned single lambs appear to have suffered a setback as they only put on an average of 1.6kg in the 2 weeks post weaning. By comparison, the weaned singles with ewes and lambs and the unweaned lambs both put on an average of 6kg. Despite the setback, the weaned lambs had a rapid growth rate after 16 weeks of age and were catching up by 21 weeks of age.

Figure 18 shows that there was very little difference in the weights of the twins regardless of whether they were weaned, unweaned, or weaned with ewes and lambs.

**Figure 17: Site 4 Average weights of weaned vs unweaned single lambs**



**Figure 18: Site 4 average weights of weaned vs unweaned twin lambs**



All mobs on site 4 went into paddocks with over 1600 kg DM/ha. The feed for each paddock can be seen in figures 19, 20 and 21 below. All feeds had a strong clover base.

Figure 19: Feed for group 1



Figure 20: Feed for group 2



Figure 21: Feed for group 3



Abattoir data was also collected for Site 4 twin lambs. This showed no significant differences in the hot carcass weights and the lean meat yield between weaned and unweaned lambs (Figure 22 and 23).

Figure 22: Site 4 hot carcass weight of 22 week old twins

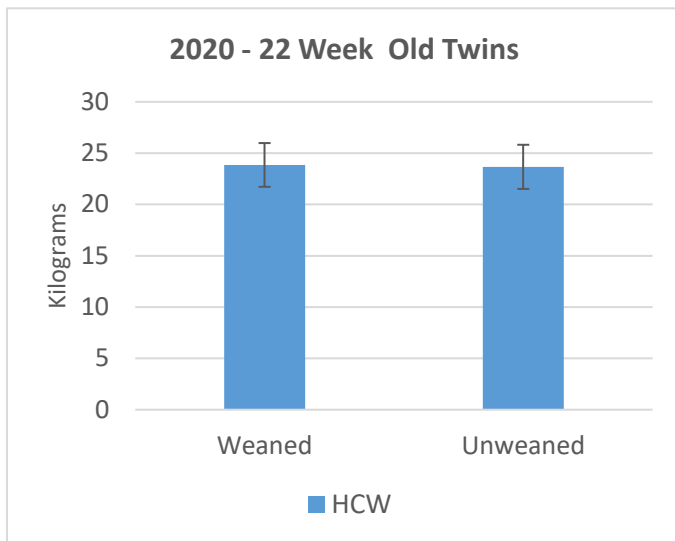


Figure 23: Site 4 lean meat yield of 22 week old twins



### 4.1.3 Results summary

The results of this demonstration varied substantially between farms and across years. Whilst every attempt was made to account for the major variables (eg feed on offer, birth type) it was not possible to account for all variables. Factors such as time of lambing (both within and between farms), pasture composition, stocking rate, mob size, pasture growth rates, nutrition, management

and genetics are all known to have a significant outcome on lambing success and lamb growth rates and a combination of one or all of those factors could explain the results obtained at Site 4.

A summary of the results can be seen in Table 1. It shows that there were inconsistencies across the different sites.

**Table 1: Results summary**

Site	Comparison	Results
<b>Year 2019</b>		
1	Combined weaned vs unweaned	Weaned lambs finished 2kg heavier than unweaned lambs
	Twin weaned vs unweaned	Weaned twins finished 3kg heavier than unweaned twins
	Single weaned vs unweaned	No difference
	Combined twins vs singles	Twins started 4 kg lighter and finished with no difference
2	Combined weaned vs unweaned	No significant difference
	Twin weaned vs unweaned	No difference
	Single weaned vs unweaned	No difference
	Combined twins vs singles	Singles started and finished 5 kg heavier
3	Combined weaned vs unweaned	Unweaned lambs finished 3.5kg heavier
	Twin weaned vs unweaned	Unweaned twins finished at least 8kg heavier
	Single weaned vs unweaned	Unweaned singles finished 1.5kg heavier
<b>Year 2020</b>		
4	Single weaned vs unweaned	Unweaned lambs finished 6kg heavier
	Twin weaned vs unweaned	Very little difference
	Lean meat yield of 22 week old twins	No significant difference between weaned and unweaned
	Hot carcase weight of 22 old week twins	No significant difference between weaned and unweaned

## 4.2 Extension and communication

Extension and communication activities are listed in Table 2.

**Table 2: Extension and communication activities**

Date	Activity	Details
Jul 2019	Condition score and FOO assessing workshop	7 attendees
Feb 2020	Presentation to group - Year 1 results	8 attendees
June 2020	Online presentations to Boort, Campaspe Lamb, Maryborough and Timmering BestWool/BestLamb groups	30 attendees
April 2021	Presentation to group - Year 2 results	11 attendees

May 2021	' <a href="#">Newsflash</a> ' newsletter article - Year two demonstration trial results confirm survival management strategies	Circulated to 3,500 subscribers
June 2021	Social Media – <a href="#">Twitter</a> and Facebook post -To wean or not to wean webinar promotion	
June 2021	To wean or not to wean results webinar	60 attendees
June 2021	Radio interview to promote results	
Sep 2021	Social Media - Facebook post -To wean or not to wean	
Apr 2022	Presentation to group - Final results	3 attendees
Aug 2022	Project summary development	

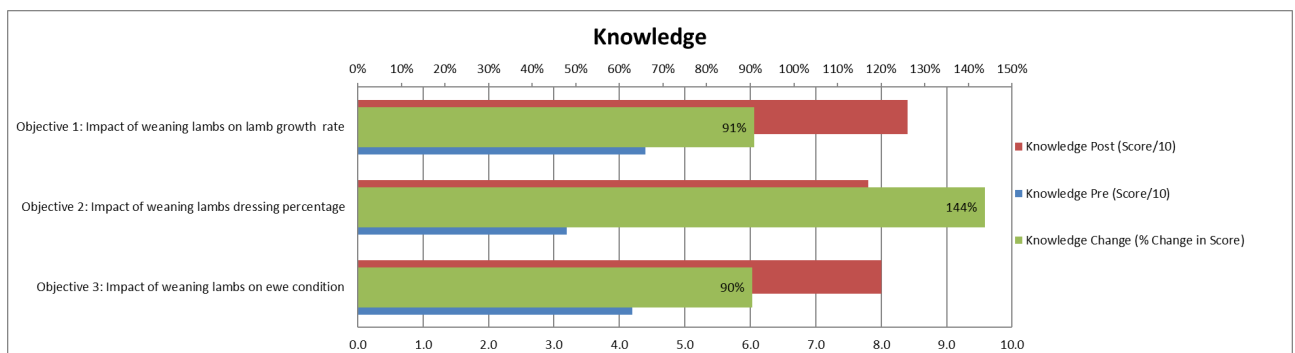
### 4.3 Monitoring and evaluation

COVID-19 restrictions severely impacted the number of skill enhancing activities that the group could be involved in. A FOO and condition scoring workshop was held in 2019 but could not go ahead in 2020 and 2021.

A pre and post evaluation survey was completed with St Arnaud BestWool/BestLamb members. The evaluation measured changes in knowledge, attitude, skills, aspiration and adoption (KASAA). The pre and post demonstration survey was undertaken by five producers. The survey involved producers rating their knowledge, attitude and skills from 1-10 and indicating practices they'd adopted.

Producers indicated their knowledge of the impact of weaning lambs on lamb growth rate from 4.4/10 pre-demonstration to 8.4/10 post demonstration. Knowledge of impact of weaning lambs dressing percentage by 144% from 3.2/10 to 7.8/10. Knowledge of the impact of weaning lambs on ewe condition from 4.2/10 pre demonstration to 8.0/10 post demonstration (Fig 24).

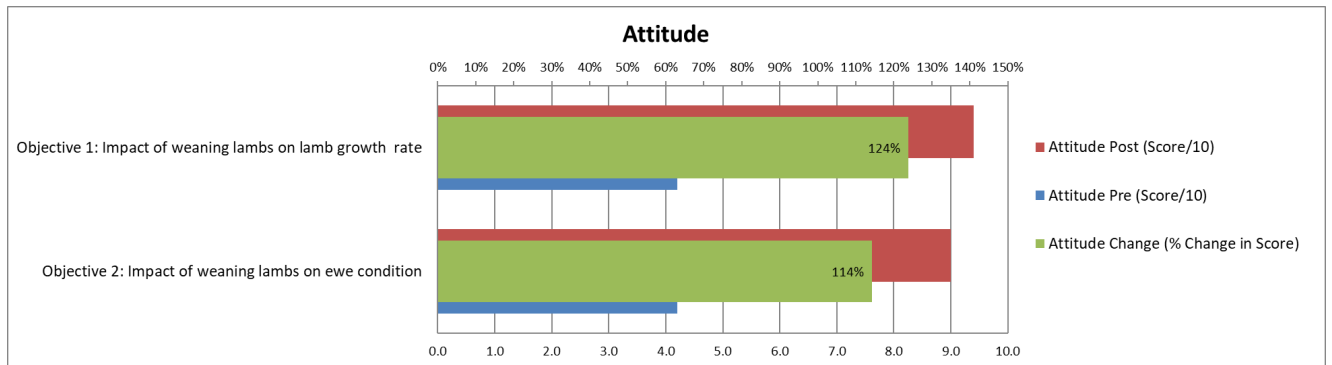
**Figure 20: Knowledge**



Attitude towards weaning lambs increased over time, with the attitude to the impact of weaning lambs on growth rate averaging 4.2/10 pre-demonstration and 9.4/10 post demonstration and the attitude to the impact of weaning lambs on ewe condition averaging 4.2/10 pre-demonstration and 9.0/10 post demonstration (Fig 25).

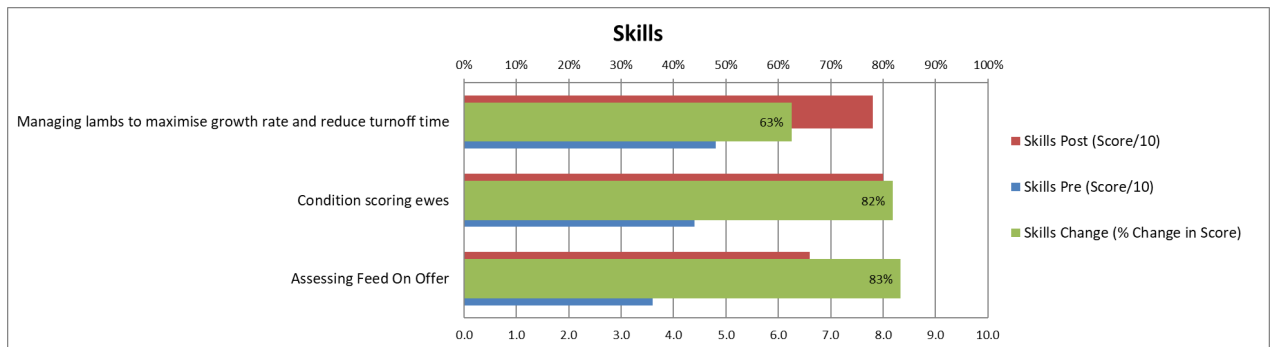


**Figure 21: Attitude**



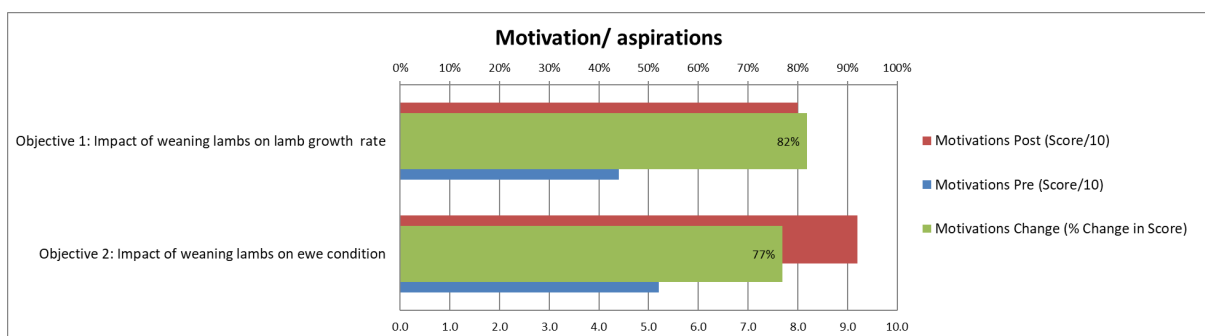
Skills in managing lambs to maximise growth rate and reduce turnoff time increased by 63% from 4.8/10 to 7.8/10. Skills in condition scoring ewes increased from 4.4/10 pre-demonstration to 8.0/10 post demonstration. Skills in in assessing Feed On Offer increased by 83% from 3.6/10 to 6.6/10.

**Figure 22: Skills**

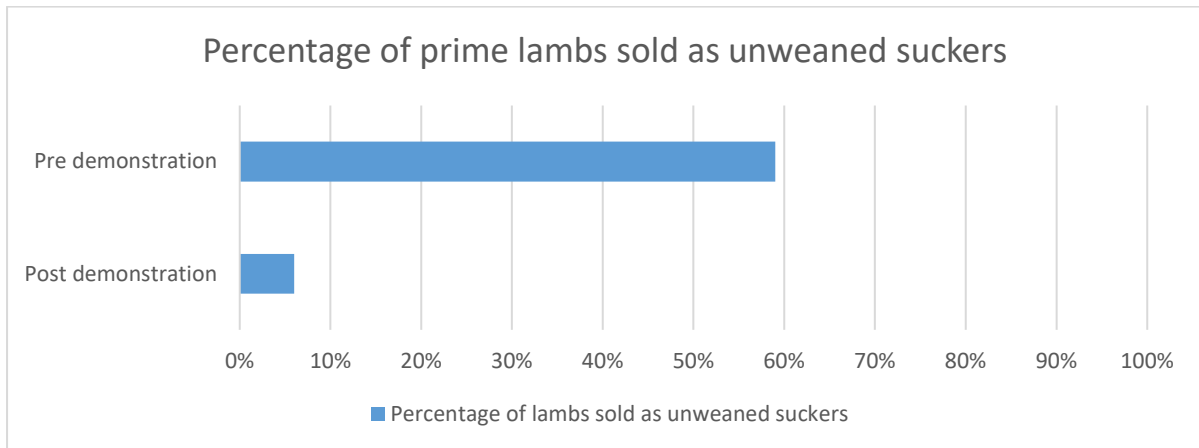


The motivations to wean lambs due to the impact of weaning lambs on growth rate increased by 82% from 4.4/10 to 8/10 and the motivation to wean lambs based on impact of weaning lambs on ewe condition increased from 5.2/10 pre demonstration to 9.2/10 post demonstration.

**Figure 23: Motivations/Aspirations**



The average percentage of prime lambs sold as unweaned suckers decreased from 59% pre demonstration to 6% post demonstration.

**Figure 24: Adoption**

**1. Have you changed practice throughout this demonstration, or do you intend to?**

- Yes weaning more lambs after the first lift of suckers.
- The age of lambs younger at weaning.
- Just now plan to wean all. Have always prior just weaned merino and left cross breed's on mum. Now will just wean all.
- Weaning more cross breed lambs at a younger age
- We wean everything now

**2. If yes, what benefits are you seeing?**

- Ease of management with no real difference in the end outcome & ewe condition score.
- It makes management easier by managing ewe condition and also feed options.
- Ease of management and better feed options
- Better feed options, resting ewes for better joining, pasture management, the list is nearly endless
- Better management, it makes you plan & have better feed options

Of the four producers with demonstration sites, three have changed their practise to weaning their prime lambs at the 12 week mark, the fourth farm moved out of sheep farming in 2021 to focus more on the cropping side of their operation but would have changed their practise if they had stayed in the sheep industry. The group found management of weaned ewes and lambs to be simpler and beneficial to their farming systems. The fact that the weaned ewes have lower nutritional requirements means they can be moved onto lesser value pastures, leaving more of the high-quality feed available for lambs. This has led to one producer increasing their stocking rate. Another producer just enjoys the fact that they don't need to draft the ewes off before they weigh the lambs, which makes the job much quicker. The group found trial results to be reassuring and useful but they are now weaning largely because of the easier management it provides within their production systems.

## 5 Conclusion

The results from this project demonstrated that there was little difference between the weights of weaned and unweaned lambs at the point of sale. Additionally, abattoir data from one host property showed no significant difference in hot carcass weights and the lean meat yield between weaned and unweaned lambs. The demonstration provided reassurance to the producers involved that lambs would not be set back by weaning, but also encouraged group members to apply the knowledge they had gained through the demonstration. This application resulted in improved paddock feed allocation to ewes and lambs ensuring that weaned lambs had access to high quality

(legume proportion >30%) feed to ensure weaner growth targets could be met. Although not all of the project objectives were met we were able to demonstrate that there were no penalties for weaning lambs – provided there were high quality pastures to wean onto and this in itself resulted in 100% practice change of the producers involved who will now routinely integrate cross bred weaning into their management strategy into the future.

## 6 Benefits to industry

This project demonstrated that there were no adverse outcomes to weaning lambs. Although some of the project objectives were not met or could not be quantified, the main outcome of the trial highlighted that the downside risks of weaning lambs are unfounded. For example, the data collected from three properties across three years showed that growth, weight, dressing percentage and lean meat yield of weaned lambs were not negatively correlated with weaning compared to unweaned lambs. These results suggest that producers could adopt a weaning program in consultation with their livestock advisor to achieve beneficial health and welfare outcomes together with a lamb marketing and selling plan with no negative economic or productivity outcomes.

Weaner mortalities and ill-thrift are reported as costing the Australian sheep industry \$187.55 M per annum (<https://www.mla.com.au/news-and-events/industry-news/archived/2016/the-true-cost-of-disease-to-australian-producers/>) and weaning weight and post weaning growth are two key factors that influence weaner survival (Hatcher *et al* 2008). Weaner mortalities across Australia can vary between 4.6% (Campbell *et al* 2014) to 14.6% (Hatcher *et al* 2008) if weaner growth and weight is not monitored frequently. To achieve optimal growth and survival outcomes, producers should consider following the current industry guidelines on best practice weaning.

These include:

1. Preparing weaning paddocks to achieve 1200-1500kg DM/ha of high quality perennial pasture containing at least 20% legume
2. Maintaining the pasture species in a vegetative state with minimal grass seed with lower fibre content that could reduce intake
3. Weaning paddocks to be low worm risk (eg not lambing paddocks)
4. Aiming to have weaners at 40% of their mature weight at weaning and 45% of mature weight by the start of summer
5. Weaning lambs at 12-14 weeks from the start of lambing. Lambs can be weaned at 10 weeks of age provided the joining period was no longer than 5 weeks, so that the youngest lamb weaned is not less than 5 weeks of age
6. Weighing and drafting weaners into differential management groups if there is a large variation in weight at weaning or the joining period exceeded 35 days.
7. Monitoring weight gains post weaning to ensure the lightest 25% of weaners are identified, drafted and managed accordingly.

Weaning lambs had many benefits for the participants of this trial. For example, weaned lambs were given access to access the highest quality pastures without grazing competition from their dams and prior to pasture senescence and seed set to maximise lamb intake and growth rates. Furthermore, the participants were able to create a rotational grazing system with large mobs of ewes post weaning who could manipulate the feed on offer and sward composition. The preparation of these paddocks by ewes gave the participants additional grazing options for lambs following late spring and summer rain events.

The producers participating in this project wean their Merino lambs and are following best management guidelines to weaning. The fact that they are familiar with the process (and

management of) weaning and were able to transfer this knowledge and skill to their prime lamb operation played an important role in the successful outcomes of this project.

## **7 References**

Campbell, A.J.D., Broekhuizen, A., Curtis, K., Croker, K.P., Behrendt, R., Thompson, A.N., 2014. A survey of post-weaning mortality of sheep in Australia and its association with farm and management factors. *Anim. Prod. Sci.* 54, 783.

Hatcher, S., Eppleston, J., Graham, R.P., McDonald, J., Schlunke, S., Watt, B., Thornberry, K.J., 2008. Higher weaning weight improves postweaning growth and survival in young Merino sheep. *Anim. Prod. Sci.* 48, 966–973.

## **8 Appendix**

## Appendix 1: Site data summaries

### Site1 2019

RECORDS								
			Singles	Twins				
	Date		Mob1	Mob 2	Mob 3			
Pre-Lambing worm treatments		Drench	5/03/2019					
		Capsule		13/02/2019				
Treatment info at start of lambing	10-Mar	Treatment description						
		Paddock name	White Dam	Johnes River				
		Paddock size (ha)						
		Number of ewes in mob	164	151				
Supp feeding during lambing		Average ration fed (g/hd/day)	0.5kg dm/day	1kg dm/day				
		Type of supplementary feed	Mix/hay	Grain, mix/hay				
		Method - trail or self feeders		Feeder (600g/day)				
Marking: ewe and lamb data & FOO	30-Apr	Ave. ewe condition score (1-5)	3	2.5				
		Average FOO (kg DM/ha)						
		Pasture composition						
		Number of lambs marked	141	171				
		Number of ewe deaths	1	2				
		Avg Lamb weight	14.3kg	14.7kg				
		Ewe Wet/dry %	15%	18%				
Please state what each treatment is made up of and which mob the ewes and lambs came from								
Treatment A	Single Lambs Not weaned							
Treatment B	Twin Lambs NOT weaned							
Treatment C	Weaned Lambs							
Treatment D	Weaned singles with Twin ewe mob							
Treatment E	Weaned Twins with Single ewe mob							
						Overall Farm avg		
	Date	Treatment ID	A	B	C	D	E	
Weaning 12weeks	6/06/2019	Average Lamb Weight	22.7kg	18.6kg	20.6kg	22.7kg	18.6kg	
		Average daily gain	227g/day	105g/day				
		Average ewe weight	56.9kg	53.5kg				
		Average Ewe Condition Score (wet)	3	2				
		Average FOO (kg DM/ha)	2000	3000	3000			
		Pasture Composition						
6 weeks post Weaning (drenched, 6 in 1, B12 given)	3/07/2019	Average Lamb Weight	27.1kg	25.1kg	29.5kg	28kg	26.5kg	
		Av daily gain	210g/day	260g/day	350g/day	220g/day	280g/day	
		Number of Lambs % prime						
		% of Lambs over 30kg avg	21%	13%	93%	40%	56%	
		Price received from lambs						
		Ewe wet dry C/S	4	4				
		Average Ewe weight	57.2kg	60.7kg				
		Average Ewe Condition Score (wet)	2.5	2.5				
Average FOO (kg DM/ha)	2800	2800	3000					
All lambs under 38kg weaned and run together	18/07/2019	Average Lamb Weight	31.9kg	27.2kg	33.1kg	29.2kg	30.8kg	
		Av daily gain (lamb)	320g/day	140g/day	240g/day	80g/day	286g/day	
		Number of Lambs sold	7					
		Sale method Direct or Yards	direct @38kg +					
		Price received from lambs						
		Average FOO (kg DM/ha)	2800	1800	3000			
		Ewe wet dry C/S	4	4				
		Ewe Weight avg	58.8kg	61.4kg				
Average Ewe Condition Score	3	2.5						
All lambs over 40kg sold to market	12/08/2019	Average Lamb Weight	36	33.5	39.7	35.9	37.5	
		Av Daily gain (lambs)	160g/day	250g/day	260g/day	260g/day	260g/day	
		Number of Lambs sold	22	13	19	2	4	
		Average Ewe Condition Score						
		Sale method Direct or Yards	Yards	yards	Yards	Yards	Yards	
		Price received from lambs	142	142	142	142	142	
		Average FOO (kg DM/ha)	2500+	2500+	2500+	2500+	2500+	
		Ewe numbers wet dry						
Ewe deaths								
Sold on farm via draft	29/08/2019	Average Lamb Weight	37.4	36.7	40.7	38.1	39.5	
		Av Daily gain (lambs)	80g/day	188g/day	60g/day	130g/day	117g/day	
		Number of Lambs sold	70	95	21	15	14	
		Average Ewe Condition Score						
		Sale method Direct or Yards	On farm	On farm	On farm	On farm	On farm	
		Price received from lambs	\$130	\$130	\$130	\$130	\$130	
		Average FOO (kg DM/ha)	2000+	2000+	2000+	2000+	2000+	
		Ewe numbers wet/ dry						
Ewe deaths								
Shorn and weighed what was left then sold on 29th Nov	29-Aug	Average Lamb Weight	25.8	25.3		24.5		
		Av Daily gain (lambs)						
		Number of Lambs LEFT	2	18		1		
		Average Ewe Condition Score						
		Sale method Direct or Yards						
		Price received from lambs						
		Average FOO (kg DM/ha)						
		Ewe numbers wet/ dry						
Ewe deaths								

Site 2 2019 data

RECORDS							
	Date		Mob1	Mob 2	Mob 3		
Pre-Lambing worm treatments	N/A	Drench	All had summer drench at shearing 26/2/19				
		Capsule					
Treatment info at start of lambing	26/02/2019	Treatment description	Split into lambing paddocks				
		Paddock name	Spring	Red Dam	Top Corner		
		Paddock size (ha)	76H, 500 FOO	36H, 1200 FOO	30H, 1000 FOO		
		Number of ewes in mob	335	71	70		
Supp feeding during lambing	2/4-24/5/19	Average ration fed (g/hd/day)	685 grain, 340 hay	690 grain, 540 hay	950 grain, 270 hay		
		Type of supplementary feed	80/20 Barley Lentils plus moby/clover hay				
		Method - trail or self feeders	Trail	Feeder	Feeder		
Marking: ewe and lamb data & FOO	31/5+1/6/19	Ave. ewe condition score (1-5)	3	3	2.9		
		Average FOO (kg DM/ha)	1000	1000	700		
		Pasture composition	Ryegrass 90%	Ryegrass 80%	Ryegrass 90%		
		Number of lambs marked	277	114	95		
		Number of ewe deaths	10	1	4		
FOO when removed from pdks for weaning			1500	700	500		
Please state what each treatment is made up of and which mob the ewes and lambs came from							
Treatment A	Unweaned ewes and lambs (mob1), weaned ewes (mob1), unweaned ewes and lambs (mob3), weaned ewes (mob3)						
Treatment B	Unweaned ewes and lambs (mob2), Weaned lambs (mob1), Weaned lambs (mob3)						
Treatment C	Weaned lambs (mob1) & (mob3)						
	Date	Treatment ID	A	B	C		
Weaning	23&25/7/19	Average Ewe Condition Score	s3.2, t2.9	2.8	n/a		
		Average Lamb Weight	s31.8, t25.6	26.8, ws30.6, wt24.6	s31.4, t25.9		
		Average FOO (kg DM/ha)	1200	2500	2500		
		Pasture Composition	Ryegrass/clover	moby/ryegrass/clov	moby/ryegrass/clover		
		Ewe numbers wet/ dry	327/61	62/7	n/a		
4.5 weeks post Weaning	26/08/2019	Average Lamb Weight	s40.4, t34.9	37.7, ws40, wt32.4	s44.5, t38.1		
		Average FOO (kg DM/ha)	1000, lambs had access to feeder	3000*, lambs had access to feeder	2500* also access to feeder		
		Ewe numbers wet/ dry	For feed test comparison				
		Ewe deaths	Binzes	Haynes south	Bush north		
		Lamb deaths					
		Number of Lambs sold	None but weaned all lambs today. Partly because weaned had higher growths but also easier for my management.				
		Average Ewe Condition Score	wet3.1, dam4, daw	wet3.3, dry4	n/a		
Sale method Direct or Yards			dam=dry at marking				
Price received from lambs			daw=dry since weaning				
_ weeks post Weaning		Average Lamb Weight	Need to refer to extra info sheet.				
		Average FOO (kg DM/ha)	All lambs were running together in Bush North by this stage and pasture quality would have been deminishing.				
		Ewe numbers wet/ dry					
		Ewe deaths	Most were sold over the hooks.				
		Lamb deaths					
		Number of Lambs sold					
		Average Ewe Condition Score					
		Price received from lambs					
_ weeks post Weaning		Average Lamb Weight					
		Average FOO (kg DM/ha)					
		Ewe numbers wet/ dry					
		Ewe deaths					
		Lamb deaths					
		Number of Lambs sold					
		Average Ewe Condition Score					
		Price received from lambs					
_ weeks post Weaning		Average Lamb Weight					
		Average FOO (kg DM/ha)					
		Ewe numbers wet/ dry					
		Ewe deaths					
		Lamb deaths					
		Number of Lambs sold					
		Average Ewe Condition Score					
		Price received from lambs					
_ weeks post Weaning		Average Lamb Weight					
		Average FOO (kg DM/ha)					
		Ewe numbers wet/ dry					
		Ewe deaths					
		Lamb deaths					
		Number of Lambs sold					
		Average Ewe Condition Score					
		Price received from lambs					

**Site 3 2019 data**

	Weaning	16 weeks	21 weeks	SD Weaning	SD 4 week	SD 9 week
Singles Unweaned	33.45	45.14	49.39	5.46	7.6	6.82
Twins Unweaned	26.92	51.06		4.39	3.41	
Singles Weaned with twin mob	33.45	42.75	47.35	5.46	4.79	5.67
Twins Weaned with single mob	26.92	37.76	44.1	4.39	4.77	4.7
Singles Weaned	33.45	42.9	46.43	5.46	7.22	1.57
Twins Weaned	26.92	38.45	45.45	4.39	5.08	4.55
Weaned	30.185	40.465	45.8325			
Unweaned	30.185	48.1	49.39			
Weaned Singles	33.45	42.825	46.89			
Weaned Twins	26.92	38.105	44.775			
Unweaned Singles	33.45	45.14	49.39			
Unweaned Twins	26.92	51.06				

Site 4 2020 data

RECORDS								
Group 1: Weaned Ewes	Weaned Twin Ewes and Weaned Single Ewes							
Group 2: Singles	Unweaned Single Ewes & Lambs and Weaned Single Lambs							
Group 3: Weaned Lambs	Weaned Twin Lambs and Weaned Single Lambs							
Group 4: Twins	Unweaned Twin Ewes & Lambs and Weaned Twin Lambs							
Group	Type	Number	Type	Number	Type	Number		
Group 1: Weaned Ewes	Weaned Twin Ewes	91	Weaned Single Ewes	38				
Group 2: Singles	Unweaned Single Ewes	142	Unweaned Single Lambs	141	Weaned Single Lambs	15		
Group 3: Weaned Lambs	Weaned Twin Lambs	80	Weaned Single Lambs	20				
Group 4: Twins	Unweaned Twin Ewes	86?	Unweaned Twin Lambs	157	Weaned Twin Lambs	80		
	Date	Treatment ID		Group 1	Group 2	Group 3	Group 4	
Weaning (14.5 weeks)	27-Aug	Average Ewe Condition Score		4.04	4.04	3.89	3.89	
		Average Lamb Weight		47.83	46.63	36	36.63	
		Average FOO (kg DM/ha)		1600	1600	1600	1600	
		Pasture Composition		Clover, Rye & barley grass		Clover, lucerne, rye & barley grass & capewe		
		Supplementary Feed						
		Ewe numbers wet/ dry		38	142	91	86?	
		Take a photo of the mob and the paddock						
16 weeks	12-Sep	Average Lamb Weight			53.13	42.02	39.6	
		Average FOO (kg DM/ha)	1500	2500 plus	2501 plus	2502 plus	2503 plus	
		Pasture Composition		Clover, Rye & barley grass		Clover, lucerne, rye & barley grass & capewe		
		Supplementary Feed						
		Ewe numbers wet/ dry			142		86?	
		Ewe deaths		1	1		1	
		Lamb deaths					1	
		Number of Lambs sold - 14/9				97		58
		Sale method Direct or Yards			Yards			
		Price received from lambs			Av \$175.56		Av \$175.56	
21 weeks	10-Oct	Average Lamb Weight			58.58	50.08	50.61	
		Average FOO (kg DM/ha)	2500 plus	2501 plus	2502 plus	2503 plus		
		Pasture Composition		Clover, Rye & barley grass		Moby, Clover, lucerne, rye & barley grass & c		
		Supplementary Feed						
		Ewe numbers wet/ dry						
		Ewe deaths			1			
		Lamb deaths			1 accident at weighing	1 accident at weighi	1 accident at weighing	
		Number of Lambs sold						
Pre Sale	22-Oct	Average Lamb Weight			62.87	51.4	52.19	
		Average FOO (kg DM/ha)	2500 plus	2501 plus	2502 plus	2503 plus		
		Pasture Composition		Clover, Rye & barley grass		Moby, Clover, lucerne, rye & barley grass & c		
		Supplementary Feed						
		Ewe numbers wet/ dry						
		Ewe deaths						
		Lamb deaths						
		Number of Lambs sold - 26/10			57	52	80	
Hook numbers	28-Oct	Average Lamb Weight						
		Average FOO (kg DM/ha)		2500 plus	5000 plus	2500 plus		
		Pasture Composition		Clover, Rye & barley grass		Moby, Clover, lucerne, rye & barley grass & c		
		Supplementary Feed						
		Ewe numbers wet/ dry						
		Ewe deaths						
		Lamb deaths						
		Number of Lambs sold			0	274	160	
32 weeks		Average Lamb Weight						
		Average FOO (kg DM/ha)						
		Pasture Composition						
		Supplementary Feed						
		Ewe numbers wet/ dry						
		Ewe deaths						
		Lamb deaths						
		Number of Lambs sold						
Sale method Direct or Yards			JBS Hook	JBS Hook				
Price received from lambs			Av \$141.27	Av \$141.27				